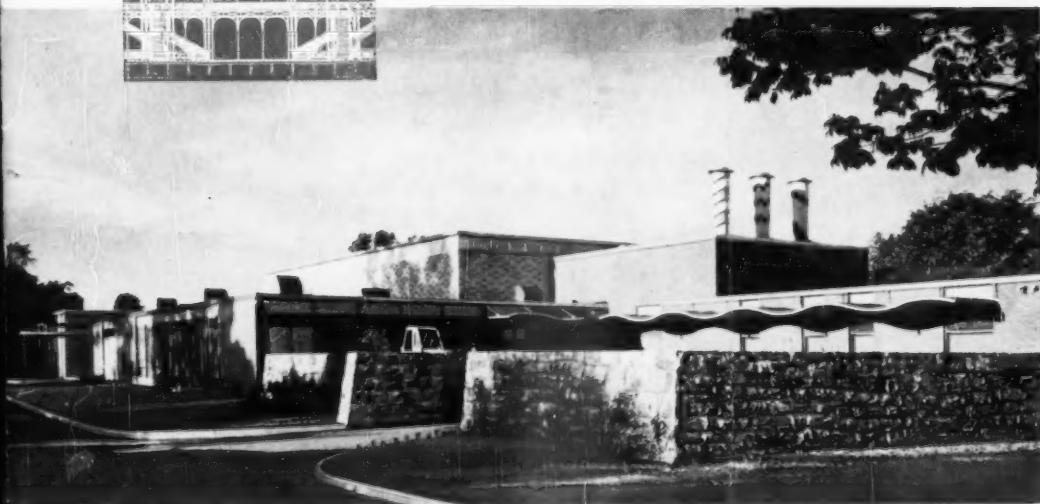
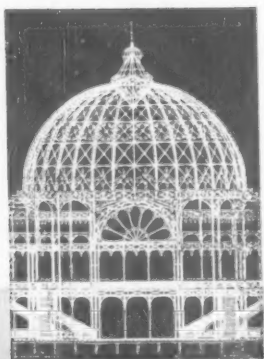


the AMERICAN SCHOOL BOARD JOURNAL

A Periodical of School Administration



**OUR
SCHOOLS
CAN
BE
BEAUTIFUL**

(See page 23)

Planning Community-Junior Colleges

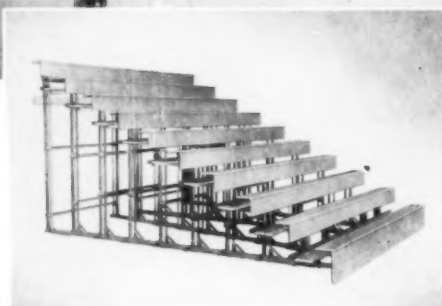
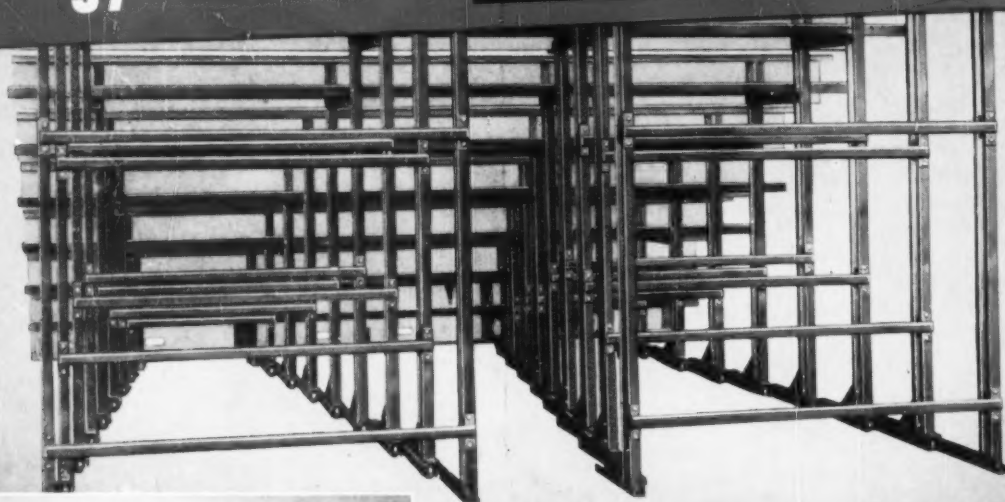
Recent Trends in School Revenues

The Missoula County High School

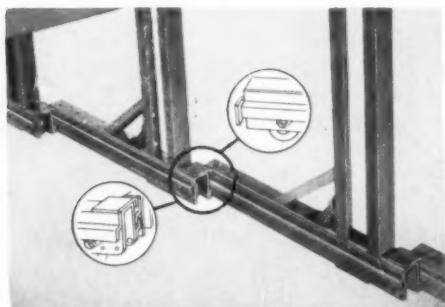
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January, 1958

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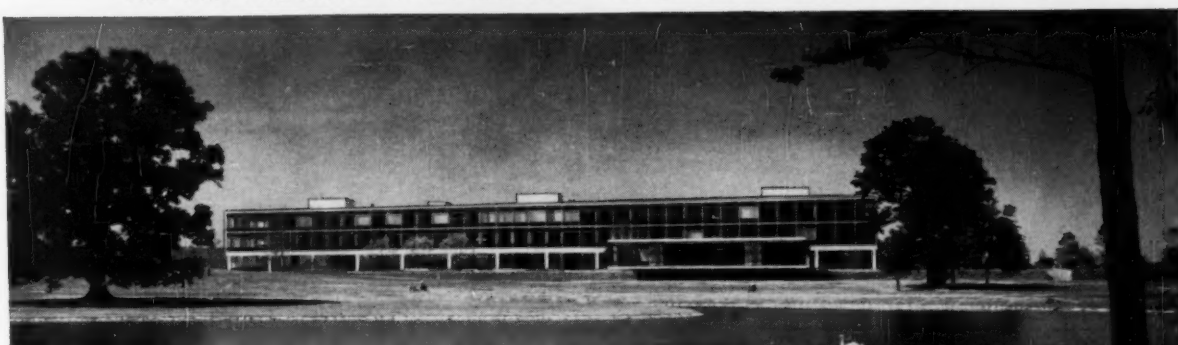
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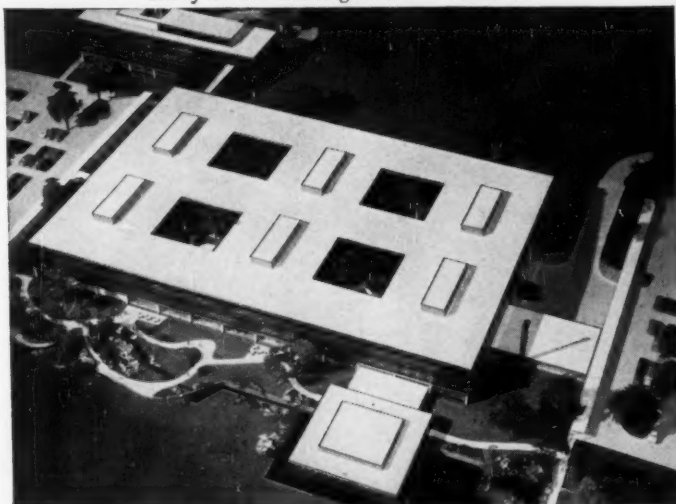


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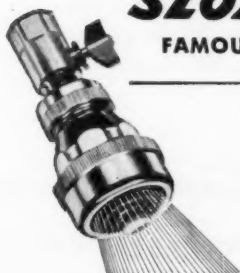
overhead multipurpose grid. Inside this spreading structure are four landscaped courts. From one end a cantilevered restaurant extends over a pool. At the other end is a separate executive wing. Over 2000 employees are surrounded by contentment, comforts and conveniences. Here, as in thousands of other fine buildings, are SLOAN Flush VALVES, famous everywhere for efficiency, durability and economy.

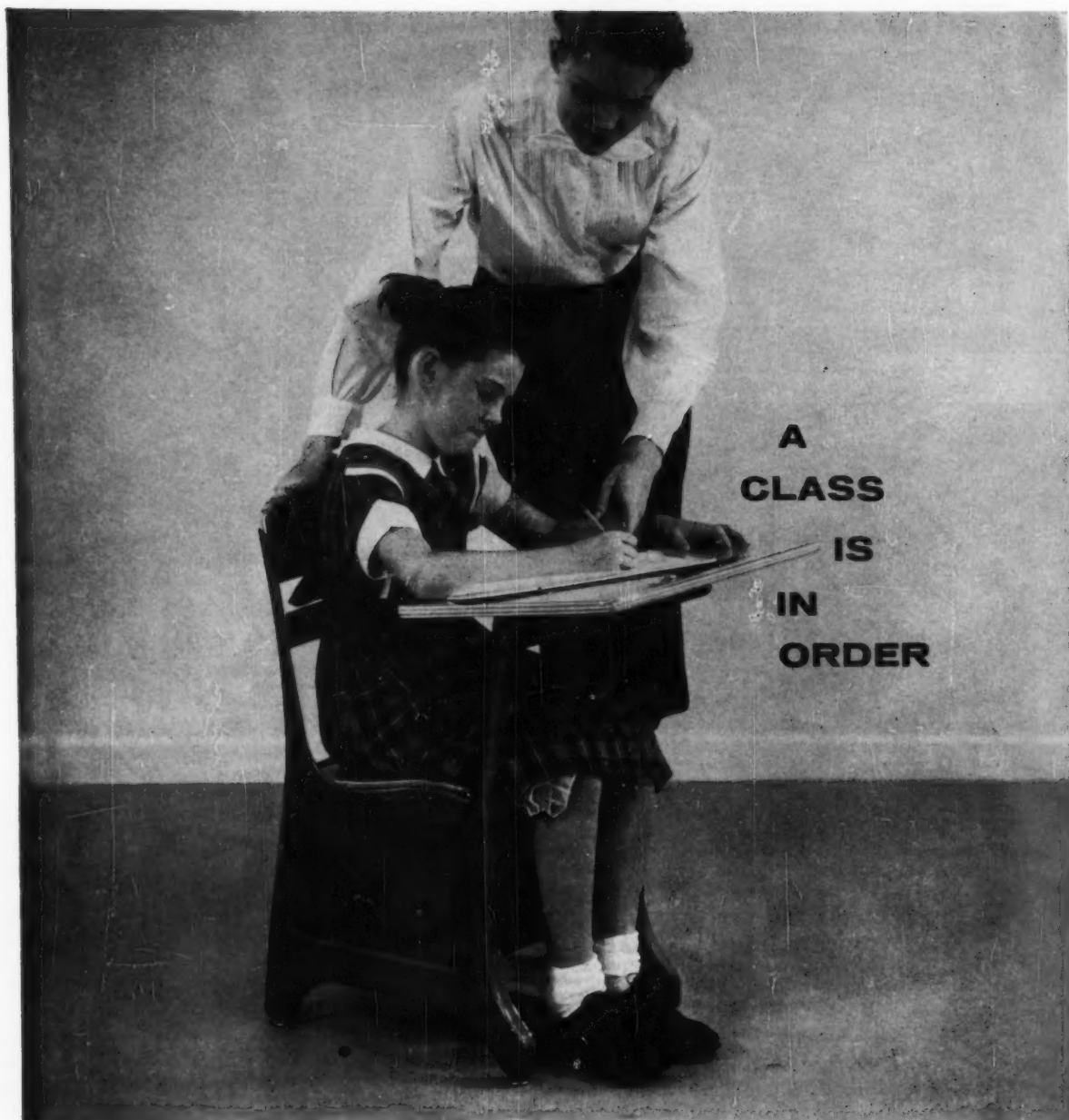
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THE AMERICAN School Board Journal

for January, 1958

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OUR COVER . . .

The revolution of art in design is illustrated on our cover by the contrast between the prototype "Candy Stick" school in Stamford, Conn. (pg. 23), and the sketch of the steel superstructure of the New York Crystal Palace for the 1853 International World's Fair.



A review of your JOURNAL for January (pg. 4) —>

WILLIAM C. BRUCE, Editor

Published on the 25th of the month preceding the date of issue by THE BRUCE PUBLISHING COMPANY, 400 North Broadway, Milwaukee 1, Wisconsin. CENTRAL OFFICE: 20 North Wacker Drive, Chicago 6, Illinois. EASTERN OFFICE: 233 Broadway, New York 7, New York.

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Your JOURNAL for January

This 35th annual schoolbuilding number of your JOURNAL surveys some of the more pressing areas and difficult problems that you will encounter in planning and building your new schools. Among them:

Planning. Perhaps you are discussing a community-junior college for your district. If you are, and if you're searching for good, general guidelines on how to plan this type of school, you'll welcome our review of how one—the prototype Everett, Wash., junior college—was planned. The article, written by Drs. Martorana and Morrison of the Office of Education and president



Giles of Everett, offers you some sane advice to remember in your discussions.

Design. All the ornate towers and "gingerbread" that signified beauty in our pre-war schools vanished before the "functionalism" of our modern schools. Much of this was salutary, but we've heard the question frequently: "Have we gone too far? Without spending more than a small fraction of the total construction cost of the plant, a few touches of

color or sculpture can help transform a building into a really appealing school. Architect Ballard suggests how you can do this.

In the area of school *finance*, Dr. Hutchins reviews and projects trends in revenues. In *heating* there's some original data on the costs of air conditioning. Dr. Peters tells you how many parking spaces your new school *site* should have.

These, again, are only a few of the highlights. Three sane high schools are presented, and our regular columns all have solid information on school construction.

And be sure to use our advertisers' messages for some truly invaluable aid in your school construction programs. The convenient index card, "Readers' Service Section," that follows page 72 has postpaid, addressed postcards for your use when inquiring for catalogs or other advertisers' services.

for February...

By way of preview, your February JOURNAL headlines a most important analysis by Dr. S. J. Knezevich of Iowa of the role of school boards in their building program—with several statements on their responsibility that are especially pertinent in their days of defeated bond election proposals.

The Editor

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EDITORIAL MATERIAL. Manuscripts and photographs bearing on school administration, superintendence, school architecture, and related topics are solicited and will be paid for upon publication. Contributions should be mailed to Milwaukee direct and should be accompanied by return postage if unsuitable. The contents of this issue are listed in the "Education Index."

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Our school units include laboratory equipment for Biology, Chemistry, Physics, and General Science. For additional information on all types of laboratory equipment, fill in the coupon below.



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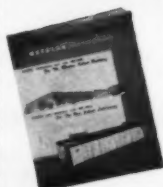
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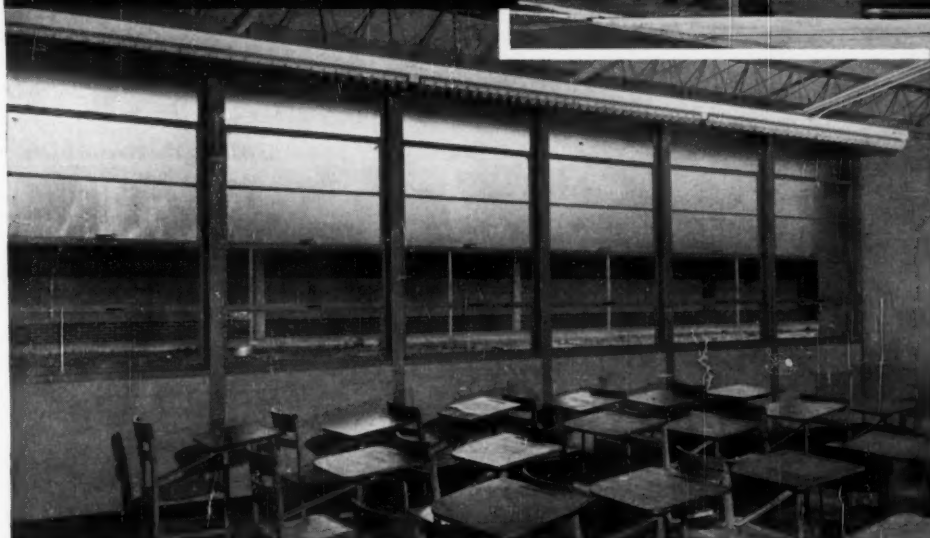
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Translucent Glass Diffuses Daylight in Florida High School . . . Makes Students' Seeing Tasks Easier

Students of the Santa Fe High School, Alachua, Florida, enjoy plenty of "eye-easy", diffused daylighting for all visual tasks. Extensive use of Mississippi's attractive Factrolite pattern in the upper three lights of the window walls, floods classrooms with softened, even, natural illumination that eliminates harsh contrasts and sharp shadows . . . literally puts more and better light on all subjects. This glass also fights eye fatigue by reducing glare . . . helps protect young eyes.

To provide maximum illumination with greatest safety, this modern school has also installed Mississippi's Polished Wire Glass in doors. This sturdy wire glass protects against mishap from breakage or fire. An approved fire retardant (No. 32), Mississippi Wire Glass tends to bottle up small conflagrations before they can roar into holocausts.

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Mississippi constantly tests daylighting applications of its glass in a schoolroom erected on factory grounds. Results of these tests and assistance of Mississippi technicians are available to you upon request.



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Surveying the School Scene



FEDERAL AID TO SCHOOLS

The U. S. Department of Education, Health, and Welfare has allocated \$31,792,980 in federal funds to help provide classroom facilities in communities where federal activities have caused school overcrowding.

It is expected that the situation in 153 school districts in 36 states and 2 territories will be relieved through the construction of these new facilities.

POLICE DUTY FOR SPECIAL SCHOOLS

In New York, a special grand jury investigating lawlessness in Brooklyn public schools has suggested that a uniformed policeman be assigned to each school in the city. The proposal was made to Kings County Judge Samuel S. Liebowitz, who promised to study the legal questions involved. There are 918 schools in the city, including elementary, junior high, senior high, vocational, and evening schools. Supt. Jansen has opposed the proposal.

ILLINOIS REORGANIZATION

The school district reorganization movement in Illinois is still going on, according to State Supt. Vernon L. Nickell. There were 1849 districts of all types and sizes at the end of 1956-57, which was a drop of 169 districts in one year. Twelve years ago, there were 11,995 districts, the majority of them

of the one-room category. Mr. Nickell states that 72 per cent of the state's area is now included in unit districts. In the rest of the state, separate and overlapping districts pro-



"This happened without any violence at all."

vide elementary and secondary districts. Unit districts total 344, an increase of six in a year. Secondary districts, with high schools only, decreased 11 to 280. The elementary districts decreased to 1225 down 164.

OUTLOOK FOR EDUCATION

A continuing competition for beginning and experienced teachers from industry was predicted as one facet of education in the immediate future by the National Education Association's recently released *Advance Estimates of Public Elementary and Secondary Schools*. The competition will be especially keen for "vocational, mathematics, and science teachers," according to Sam. M. Lambert, director of the NEA research division.

The report also summarized such developments in 1957 as:

1. A total enrollment in public elementary and high schools of 33,508,814—an increase of 3.8 per cent over last year.
2. An average classroom teacher salary of \$4,250—an increase of 7.1 per cent over last year.
3. A total of 1,240,424 teachers—4.2 per cent more than last year.
4. An average expenditure per pupil in daily attendance of \$320—an increase of 6.7 per cent.
5. A decrease in the number of school districts from 53,197 to 49,477.

FEDERAL SCIENCE PROGRAM

The administration's program of federal aid to increase the nation's output of scientists, engineers, and mathematicians now has been defined to include these four areas:

1. A nationwide testing system of students to discover aptitudes and capabilities.
2. A system of incentives for high-aptitude students to pursue scientific and professional studies.
3. A program to stimulate good quality teaching of mathematics and science.
4. The provision of facilities and fellowships to increase the quality output of teachers.

Regarding the scholarship program, grants will be made to the states and they—probably through scholarship boards—will award the scholarships on the basis of competitive tests and need of the applicant.

The thinking now is that the scholarship program will be "noncategorical"—that is, it will not be limited to students who will major in science or mathematics. However, there will be a provision in the Administration bill permitting the President to "reserve" a percentage of the scholarships for disciplines that the nation may need in time of emergency.

TELEVISED BOARD MEETINGS

For the past two years complete meetings of the Houston, Tex., school board have been televised twice a month over KUHT-TV. Rated as the station's most popular program, the "shows" have attracted as many as 250,000 viewers. Because of the televised meeting-

(Continued on page 62)

THE SUPERINTENDENT IN A STATUTORY NO-MAN'S LAND

The school superintendent operates "in a statutory no-man's land" when it comes to salary, job protection, fringe benefits, etc., according to the AASA's new booklet, *Shoring Up Legal and Policy Provisions for the Superintendent*.

Published as an effort to strengthen the superintendent's position, the booklet concludes with several questions that should be of interest to most school boards. These include:

- Should superintendents be required to qualify for a certificate specifically designed for their position?
- Is a minimum salary law or schedule desirable?
- Should superintendents be covered by tenure? If tenure is deemed desirable, should superintendents be included in the teachers tenure law or covered by a separate law, the provisions of which may be more pertinent to the superintendent's position?
- Is an arbitration procedure more, or less, advantageous to superintendents than the dismissal procedures found in typical tenure laws?
- What length of contract period should be adopted as standard for superintendents not on tenure? Is a long-term contract more, or less, advantageous than tenure coverage?

- How can superintendents who move from one retirement system to another gain credit for previous service?
- Should superintendents be able to retire on an allowance in line with their active salaries, without ceiling limitations applicable in some systems?
- Do superintendents need insurance coverage to a level higher than that of other school employees?
- Should superintendents be entitled to leaves of absence under formal rules and regulations?
- How can superintendents gain academic freedom?
- Should the powers and duties of superintendents, as distinguished from those of the board, be spelled out or should they be left to the discretion of individual boards?

The booklet also suggests several courses of action:

- State associations of school boards could establish study programs or research committees in this field.
- Existing restrictive laws might be repealed.
- New laws might clear the way for needed local action.
- Local boards could accept responsibility for action under existing statutory authorization.
- Mandatory legislation might be enacted.

justly, the pride of six communities!

New Senior High School of the Chambersburg Joint School Authority, Chambersburg, Pa., serving six school districts. Architects: Lawrie and Green, Harrisburg, Pa.



One of many splendid features—this ideal multi-purpose gymnasium, end-result of the meeting-of-minds of 36 forward-looking school directors.

Floored, for a long future, with **NORTHERN HARD MAPLE**

The endurance, resilience and brightness that have made Northern Hard Maple flooring virtually the universal choice for gymnasium and multi-purpose rooms, make it ideal for other hard-usage school areas. It fights abrasion and impact, doesn't splinter. Cleaning and maintenance are easy. Refinishing, when finally needed, is simple (there's always a "new floor" underneath). Specify Northern Hard Maple with the confidence it has earned. It is available in regular strip or in block and pattern designs, in standard, warranted **MFMA** grades, offering almost endless variety. The **MFMA** mill-mark is your warranty of strict grading, genuineness of species and precision manufacture.



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How you can REDUCE SCHOOL COSTS...

Instead of stinting on the heating and ventilating system in an effort to economize, many school boards have reduced the cost of their new school buildings by the installation of an advanced hot water system—and at the same time have increased their classroom thermal comfort.



? What is this heating and ventilating system that saves up to 20% of the construction, equipment and installation costs incurred by some other systems?

A. It is the Nesbitt Series Hot Water Wind-o-line System. Every classroom has its own Syncretizer for heating, ventilating, and natural air cooling. Wind-o-line fin-tube radiation (in wall-hung enclosures or in storage cabinets) extends along the sill to protect against cold walls and window downdraft.

Q. How does this system save so much money?

A. The copper tubing of the Wind-o-line radiation becomes the supply and return mains for the Syncretizers in a group of classrooms or an entire wing. This saves on pipes and covering and eliminates expensive pipe trenches, mains and runouts. Circulating less hot water, smaller pipes and pumps are needed. Piping within the units is factory-assembled; labor costs are reduced. Night temperature is maintained by gravity heating, saving controls.

Q. How does the system create a better thermal environment?

A. By solving (in the only sure way, with Wind-o-line radiation) the cold wall and window downdraft problem, as well as providing (by means of the Syncretizer) the heating, ventilating and natural cooling called for in each classroom. This double protection assures healthful comfort—without physical distraction—for every pupil in the room—even those along the windows. It is “the thermal environment most conducive to learning”—a Nesbitt distinctive.



These schools saved money

Some of the recent low costs
for heating and ventilating:

In Ohio \$1.49 sq. ft.

Bath High School, Lima, Ohio
Architect: Robert A. Helser
Capacity: 550 pupils
Gross area: 37,942 sq. feet
Total contract: \$372,635
Heating and ventilating: \$56,700
Nesbitt Series Hot Water Wind-o-line System
970 feet of pipe trenches and 1,000 feet of
pipe covering eliminated

In Illinois \$1.75 sq. ft.

Rural Street Elementary School
Rockford, Illinois
Architect: Hubbard and Hyland
Engineer: E. R. Gritschke and Assoc.
Capacity: 700 pupils
Gross area: 47,250 sq. feet
Total contract: \$545,713
Heating and ventilating: \$82,826
Nesbitt Series Hot Water Wind-o-line System
1,000 feet of pipe trenches eliminated

In Wisconsin \$1.62 sq. ft.

Mequock Elementary School
Town of Scott, Wisconsin
Architect: John B. Somerville
Associates, Inc.
Engineer: R. J. Cott
Capacity: 180 pupils
Gross area: 14,420 sq. feet
Total contract: \$163,409
Heating and ventilating: \$23,371
Nesbitt Series Hot Water Wind-o-line System
210 feet of pipe trenches, 120 feet of mains
and piping, 60 feet of pipe covering, and
night controls eliminated

■ ■ ■ The Nesbitt Series Wind-o-line System is an engineering development of John J. Nesbitt, Inc., pioneers in the field of classroom thermal comfort.

No other unit ventilator is equipped to perform as well nor so economically as the Nesbitt Syncretizer; and with Wind-o-line Radiation integrated, the Nesbitt System provides its protected learning environment on the coldest days, even in classrooms with large window walls.

The forced hot water arrangement here described makes it possible for every school to afford and enjoy the unequalled benefits of the Nesbitt System.

Schools in moderate climates where finned radiation is not essential may have the economies of the series piping arrangement through the Nesbitt Mainline System.

Send for the big book, *More learning per school dollar.*



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N.S.B.A. REPORT

W. A. SHANNON Executive Director N.S.B.A.

Capital Outlay by School Boards

EDWARD M. TUTTLE

In recent years a majority of the school boards of America have faced the necessity of enlarging their school plants. For many of them, capital outlay expenditures have been a new experience and have brought new problems.

Because of the great increase in school construction, and the apparent fact that there must be much more such building for years to come before the need is fully met, architects have become increasingly interested in this field. Some few of them

Edward M. Tuttle was the first executive secretary of the National School Boards Association, Inc., serving from 1949 to 1956. At present he is Yearbook Editor and Convention Exhibits Manager for the Association. This article is a portion of Chapter 11 in a book entitled *School Board Leadership in America* which Mr. Tuttle has in preparation.

have specialized in school design, but many have had little or no experience in designing schools.

Architects themselves, and the school boards which employ them, should recognize that school design and construction differ in many ways from other types of building and require special knowledge and adaptability in the planning.

Boards should insist that their architects either (1) show evidence of experience in school design and construction, or (2) indicate a willingness to make a real study with the board, the school staff, and the community of the requirements peculiar to the construction that is to be undertaken.

Forward-looking architects, construction executives, school administrators, school board leaders, and other interested persons are more and more consulting one another as to new approaches to school plant planning in the hope that generally better design, greater economy in construction, and more effective usefulness will be the result.

Distinguishing Factors in School Construction

1. *A school plant should be the best the district can afford and should be adapted to the economic level of the community in which it stands.*

Since control of America's public schools is vested in local boards of education under state authorization, there will always be variations in the character and quality of school properties, ranging in every degree from the most elaborate to the most primitive. We cherish this local autonomy, but at the same time must recognize that it precludes any fixed standards of school construction nationwide, or even statewide, except such as have to do with safety factors, insurance risks, and related matters.

There are critics who condemn some boards of education for building schools which, they claim, are unnecessarily luxurious. It all depends upon the community concerned and the expressed wishes of the voters. If a board has involved the citizenry in its planning, as outlined earlier in this chapter, and if the community majority wants its schools to embody certain unusual features which it can afford to provide, that is its own business and nobody else's.

As a general principle, we ought to agree

that our children, during the impressionable years that they spend in school, should be given the most attractive, comfortable, convenient, and challenging surroundings that the community can provide.

No community is justified in building a cheaper school than it can properly afford, or even afford at some sacrifice of less vital concerns. To skimp on school facilities indicates a lack of regard for the community's children and its future, and adversely influences prospective residents and business interests. Conversely, investments in good schools bring incalculable benefits to the districts that support them.

2. *Public School construction is paid for with public money which the total tax-paying community contributes on a non-partisan basis.*

In consequence, the money, whether large or small in amount, must be spent efficiently and without waste or else the board which is responsible may expect to be called to ultimate account.

Critics of school construction are prone to emphasize the cost of a building in terms of the pupils it is designed to accommodate in a single year. The emphasis is entirely misleading. Cost should rather be calculated in terms of the total number of pupils the building will serve during its probable useful lifetime.

On such a basis, capital outlay for the school plant represents a very small per cent of the cost of a given pupil's education, and one of the best investments of a tax dollar that any community can make.

3. *A school plant, once built, will be expected to serve the community for at least a generation and probably longer.*

Hundreds of school buildings in use today are more than 50 years old. Some of them are still fit for occupancy; most of them should have been replaced long since.

But the very length of anticipated service emphasizes the importance of careful planning in the beginning which will produce school plants that are not only durable but are adjustable to future changes in requirements.

A first consideration is that the school site shall provide land enough around the building for both recreational and educational purposes. Nothing in this country is more

(Concluded on page 12)

SUGGESTIONS FOR BOARD-MEMBER ATTENDANCE AT CONVENTIONS

From time to time NSBA headquarters receives requests for information as to what policy should govern the attendance of board members at public expense at professional and associational conferences and conventions. Although the NSBA has never defined and adopted an official policy on this question, the best estimate of prevailing opinion among school board leaders seems to favor the following three approaches:

1) *All board members should attend their sectional meetings;*

2) *At least a majority of the members of a school board should attend their state school boards association meetings;*

3) *At least one representative from each board should attend the Annual Convention of the National School Boards Association.*

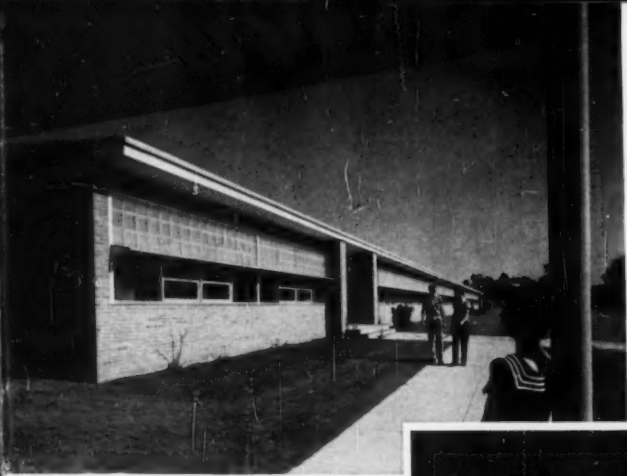
It is to be hoped that, wherever possible and appropriate, board members attending conferences will be accompanied by their superintendents and vice versa, as evidence of the "team approach" which is vital to

their mutual work and obligations.

This year the AASA will hold three regional meetings, in San Francisco, St. Louis, and Cleveland; and the NSBA will be holding its first independent National Convention at Miami Beach from April 17-19, 1958. The theme of this year's NSBA Convention is "School Boards and the Curriculum," and the many discussion sections, sectional meetings, speeches of outstanding consultants, and other experiences and opportunities to study this vital subject should prove extremely valuable to board members in increasing the effectiveness of their service to public education. This year's Convention will also feature an outstanding exhibit for participants.

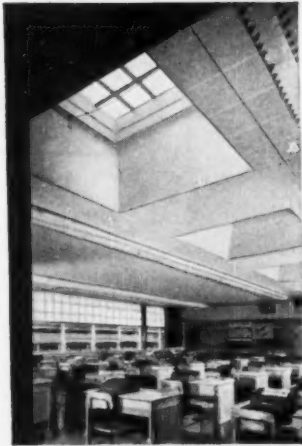

It is strongly recommended that each school board be represented at the Annual NSBA Convention, and it is hoped that representatives of many boards will also have an opportunity to attend one of the regional meetings of the AASA with their superintendents.

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Gleaming panels of Owens-Illinois Glass Block add functional beauty to the exterior of the new high school in Niles, Michigan. Architect: Eberle M. Smith & Associates.




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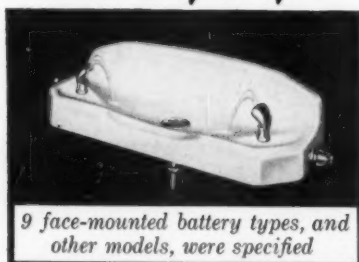
If you are planning to build a new school or modernize an old one, insure the comfort of your students and teachers by specifying Owens-Illinois Solar-Selecting Glass Block and Toplite Roof Panels. Write for details: Kimble Glass Company, subsidiary of Owens-Illinois, Dept. AS-1, Toledo 1, Ohio.

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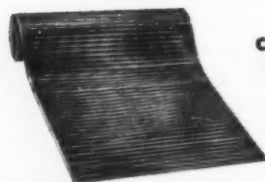
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N.S.B.A. REPORT

(Concluded from page 10)

pathetic today than to find schools built years ago without adequate land, hemmed in on every side by residences, industries, and traffic-filled streets. Such schools are no better than educational factories where mass production is carried on with little regard for the welfare of individual teachers or pupils. Surely children are entitled to something better, especially when we consider that it is primarily greater foresight and care in planning, and not simply more money, which makes the difference in the facilities.

4. *The school plant must be designed to meet the requirements of all the activities which are to be carried on within its walls and upon its grounds.*

The professional term for this is that the design shall be "functional," but all it means is that the building and grounds shall fit the varying needs of those who use them.

As far as possible those responsible for designing a new school plant should consult all who will be involved in its use—the administration, the instructional staff, the maintenance staff, the parents and community public, and even the children themselves. Suggestions and recommendations, supported by the reasons for making them, should be solicited and, when received, should be given most careful consideration in formulating the plans. Time spent in such advance planning will reduce to a minimum regrets and futile wishes for something different after the school is built.

In Conclusion

The school boards of America, facing the need for greatly expanded public school facilities to care for increases and shifts in population, have an unprecedented opportunity to make an outstanding contribution to the general welfare of their communities, their states, and the nation.

Communities which find themselves able to point with pride to their school facilities as both beautiful and efficient owe a debt of appreciation to far-sighted boards of education which assume leadership in encouraging that kind of capital outlay.

ASSOCIATION NEWS

COMING CONVENTIONS

January 9-10. **Tennessee School Boards Associations**, Nashville, Tenn., Andrew Jackson Hotel. Secy.: William B. Rich, 129 Cordell Hull Bldg., Nashville 3, Tenn. Attd.: 300.

January 13-14. **Nebraska School Boards Association, Inc.**, Grand Island, Nebr., Senior High School. Secy.: Richard C. Brown, 1027 East Avenue, Holdrege, Nebr. Attd.: 600. Exh.

January 19-21. **Louisiana School Boards Association**, The Roosevelt, New Orleans, La. Secy.: Fred G. Thatcher, Box 8986, University Station, Baton Rouge, La. Attd.: 600.

January 21-23. **Manitoba, Canada, School Trustees Assn.**, Winnipeg, Winnipeg Civic Auditorium. Secy.: Miss Elva Bell, 882 Jubilee Ave., Winnipeg 13, Manitoba. Attd.: 700.

February 10-12. **Minnesota School Boards Association**, Hotel Lowry, St. Paul, Minn. Secy.: W. A. Wettergren, Box 367, St. Peter, Minn. Attd.: 3000. Exh.

February 22-26. **American Association of School Administrators**, St. Louis, Mo. (regional) Secy.: Finis E. Engleman, 1201-16th St., NW, Washington, D. C.



Architect: John Carver
Mech. Engineers: Eggly-Furlow • Heating Contractor: C. J. Williams, Inc.,
All of Philadelphia, Pa.

◀ "Pleasure Island" Gym and Multipurpose room. Below: "Wonderland" Theatre.



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ELEMENTARY SCHOOL
TULLYTOWN, PA.**

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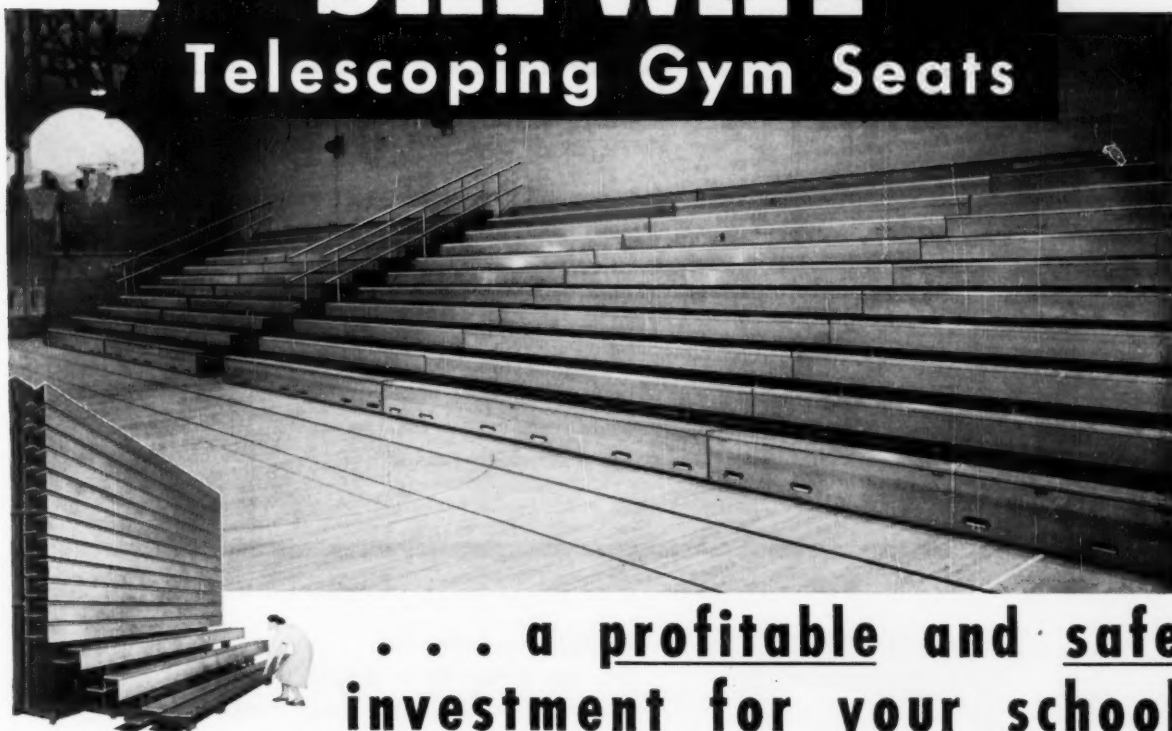
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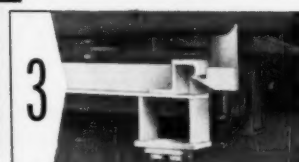
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(2) **RELEASING LATCH.** After unlocking the cylinder lock, pushing seats inward forces tapered end of latch against unlocking bar, raising notched front end and freeing row ahead.

(3) **LOCKING SHUT.** With all rows nested, brake pads are lowered and hooks engage brackets on unlocking bar.



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Parking and the School Site

**In planning new schools,
how many parking spaces
are needed?**

**In older schools,
what can be done to
relieve the growing
parking burden?**

In our society, there are many indicators of the increasing importance of the automobile: the peripheral extension of nearly all metropolitan centers; redevelopment of blighted areas; slum clearance; establishment of local shopping centers, drive-in banks and movies, as well as suburban branches of downtown stores. The two-car family is becoming relatively commonplace in suburbia, and the three-car family is not at all rare. Automobiles—65 million of them now on the roads—are becoming more and more a necessary adjunct of modern life.

This car-mindedness, this dependence on cars, on the part of the American people, is reflected in American youth. Automobile ownership and drivership by high schoolers has been increasing steadily: by 1950 nearly one third of the 14-year-olds and over were owners and operators, and by 1975, this will probably approach one half.

School administrators are generally aware and perturbed by this increasing number of youths driving to high school and the resulting growing student driving-parking problem. They realize also that we are only in the beginning stages!

Estimates of High School Drivers

The California State Department of Education, division of schoolhouse planning, recently estimated that from one third to one fourth of senior high school students drive to school in rural suburban areas, and predict that this will increase to a possible one half. On the junior college level, it is estimated that about 75 per cent of all full-time day students will drive to school by 1965.

Other suburban and rural estimates (not counting unusual or extreme situations) vary from a present per cent driving or being driven from 20 to 40, with estimates for the future (1975) varying from 30 to 55 per cent. Whatever the actual percentage (this might be an area for careful and significant study), there are a good many high school students driving, and

there is little doubt that many more will drive in the future.

Survey of Driving Habits

An especially valuable survey of pupil's driving habits was undertaken recently by the Lawrence, Kans., schools to determine "How many Lawrence, Kans., high schools students drive to school?"

The study, conducted by principal Neal M. Wherry, came at an opportune time since the transit system was in a state of flux and parking space allocation time was near. Questionnaires were distributed to and returned by 651 10-12th grade students on a normal school day (May 6) when no major athletic events or music festivals were scheduled for or after school.

By way of background, Lawrence high school serves both the city of Lawrence and the surrounding rural area. The high school plant, located on an adequate site (nearly 40 acres), is new. The school district does not maintain its own system of transportation, although public transportation was available within the city.

The questionnaire, aimed to determine student relationships to the local transit problem, analyzed among other data the home-school distances of the pupils, their means of getting to school, and car pool data. These are contained in Tables I, II, and III, respectively.

From the tables, it is evident that slightly more than 53 per cent of the Lawrence senior high school students were transported by private automobile on Q (questionnaire) Day, and that student parking for 194 cars (nearly 30 per cent of the student enrollment) is required. With probable increases in the numbers of young owners and drivers of automobiles, this parking need could easily reach the 50 per cent-of-enrollment figure.

Moving on the premise that this situation is not at all unique (many other rural, suburban, or commuter communities have similar experiences) it is not at all unreasonable to expect new rural, subur-

JON S. PETERS

School Planning Laboratory, Stanford University, Stanford, Calif.

TABLE I. Distances From School

<i>Grade</i>	<i>Under 1/4 mile</i>	<i>1/4-1/2</i>	<i>1/2-1</i>	<i>1-2</i>	<i>2-3</i>	<i>3-4</i>	<i>4-5</i>	<i>Over 5</i>	
12 girls	11	5	8	23	29	10	1	11	
12 boys	5	7	16	28	14	7	0	8	
11 girls	13	12	23	29	25	7	2	11	
11 boys	9	8	10	30	20	7	4	17	
10 girls	13	9	15	33	23	10	3	13	
10 boys	16	8	12	28	25	10	7	16	
<i>Total</i>	67	49	84	171	136	51	17	76	651

ban, and peripheral area high schools to provide parking spaces for up to 50 per cent of designed enrollments. Site-wise, this has serious implications, since only about 150 cars per acre on a 45 per cent in-and-out basis can be accommodated. With the trend to larger cars, 125 per acre may be more realistic. A senior high school of 1800 capacity, allowing parking spaces for 50 per cent of enrollment, would require between six and seven-and-one-fifth acres for student parking alone.

Up to 90 per cent of staff—instructional, administrative, clerical, maintenance, and cafeteria—will drive to school, and this will require at least 80 additional spaces. Provision must also be made for daytime visitors, although it appears that the total daytime visitations on normal school days for typical senior high schools is relatively small, rarely exceeding one per cent of enrollment at any one time.

Other factors influence school parking requirements. In new and rapidly growing areas, especially, the school may provide the only adequate community center while in most areas there has been an extension of the use of school facilities for after-school-time community use. Often—encouragingly more and more often—schools, communities, and/or other public agencies jointly develop recreational and community-center facilities like auditoria, gymnasias, and outdoor playfields. Parking spaces are required, although regular daytime facilities may suffice.

In metropolitan areas, parking spaces for public gatherings usually range from one space for parking to eight seats to one parking space to six seats. In rural and suburban areas, without well developed or accepted mass transportation, such ratios are unrealistically low; it is likely that one parking space for three seats would better fit the needs in these areas. Likewise adult evening classes would require parking, although again it is likely that the regular facilities would suffice. In any realistic planning to meet needs, it is necessary to take a good local and specific look at all of the factors.

Three Solutions for Older Schools

The whole problem of student and staff parking is readily (if sometimes painfully)

TABLE II. Means of Getting to School on May 6

<i>Grade</i>	<i>Walked</i>	<i>Came in a car which was parked</i>	<i>Rode the bus</i>	<i>Came in a car which did not remain</i>
12 girls	10	50	8	30
12 boys	6	66	0	13
11 girls	21	53	9	39
11 boys	23	50	16	30
10 girls	23	50	16	30
10 boys	29	66	4	23
<i>Total</i>	112	348	40	151

answerable for areas having adequate available sites. But, how can administrators of older plants with inadequate sites provide for parking needs?

There is, of course, no easy answer. Typically, these older plants are surrounded by developments with "exorbitant" pricing. Even so, augmentation of site, for both educational program enrichment and for parking, is probably the only satisfactory and permanent solution. On the other hand, it might not be a realistic solution *now* for a specific situation in which all available funds are really needed elsewhere or community leaders are disposed to resist any "pressure of reality" and believe "I-walked-three-miles" and "we-are-doing-too-much-for-them-now." Sites can be increased horizontally by the acquisition of more acres. When this is too costly, sites can be increased (in effect) vertically by the construction of either multiple-storied parking spaces or by constructing parking spaces underground. As far as is known, high schools haven't yet used vertical expansion for parking, but other agencies have, and it might be the best answer in certain situations.

A second partial solution to help alleviate some of the parking space pressure is through the development of a "good" school or public transportation system, which penalizes none unduly as to comfort, safety, cost, or time. Under compulsory attendance laws, minimum-age labor laws, general societal pressure on youth to attend high school, and the desire of most youth to attend, the entire question of transportation to and from school requires something of a look-see.

To consider this second partial solution, some questions which must be answered include:

Does the school have either a moral or a legal obligation to provide transportation?

What is a reasonable walking distance to school?

What is reasonable riding time? That is, at what point does time spent riding a bus seriously interfere with equality of opportunity?

On a long-term basis which is better:

TABLE III. Car Pool Data

Number of riders	Number per car	Parking spaces needed
97	1	97
128	2	64
44	3	15
44	4	11
22	5	5
13	6 or 7	2
348		194

from an expenditure standpoint: to provide additional parking facilities with the expectation that students will transport themselves or to provide fairly complete transportation? (i.e., A acres of land @ D dollars, purchased and taken from the tax rolls versus B buses and M men and C average annual cost of maintenance, operation, and depreciation). However, simple cost comparisons will not stand alone, but weigh with other factors.

A third partial solution, possibly combined with both augmentation of space and providing more efficient public or school transportation, is effective utilization of available space. This would imply a system of parking permits based on need, distance traveled, and numbers of passengers who must come to school in private automobiles. Under a tight parking situation the old business of "first come first served" is entirely unrealistic, as is an assignment of space based purely on distance traveled. Even an efficiently operated "tight" situation will become tighter with growing enrollments and added demands for adequate parking spaces.

Implied in this latter approach is utilization of some on-street parking, but—congested parking along curbs of public streets near a high school constitutes a hazard of varying but considerable magnitude, and it is probably in the public interest to provide off-street parking. On-street parking leads to many knotty little problems like: Who may park for how long? Does the school have any jurisdiction over student parking on the streets? What can be done by the principal to help keep the staff and the students from becoming "parking criminals" and neighborhood nuisances when there is sufficient off-street parking?

The best approach to on-street parking problems, and the one which works well when it is well presented, sold, and finally bought by drivers is the one based on citizenship responsibility and courtesy. Driver training courses, student body emphasis, and staff endeavor are all required. Unfortunately, such appeals are often not effective, and the recourse is establishment of time zones for parking near the school, with complete enforcement and loss of license to habitual violators. Such action simply alleviates a dangerous situation, but does not really help solve the parking problem.



A view of the front exterior of the Daniel Webster junior high school, Waukegan City school district No. 61, Waukegan, Ill. — Ekstrand, Schad, & West, architects, Waukegan. Dr. H. R. McCall is superintendent.

Daniel Webster Junior High School

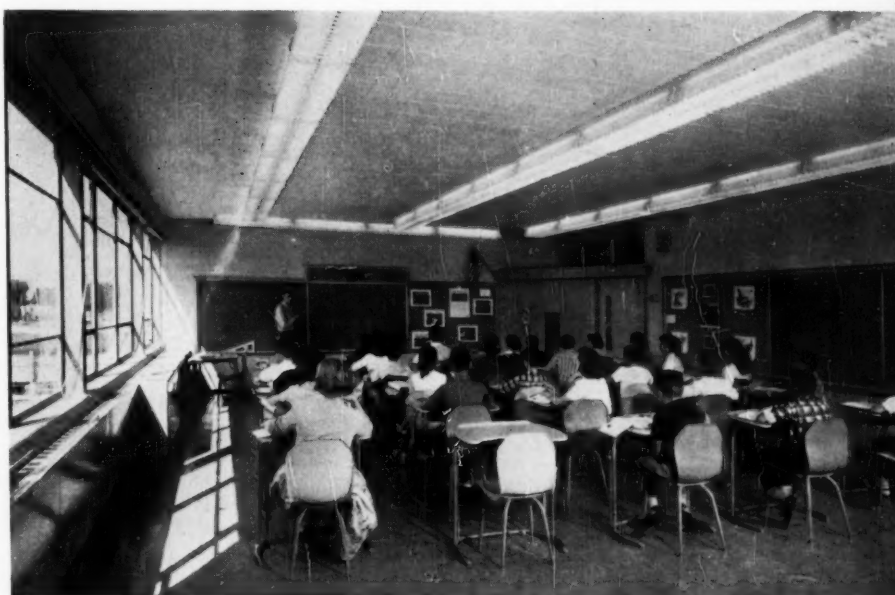
**Planned economy without sacrifice of quality
was the goal for this comprehensive junior high**

H. R. McCALL

Superintendent, Waukegan, Ill., Schools

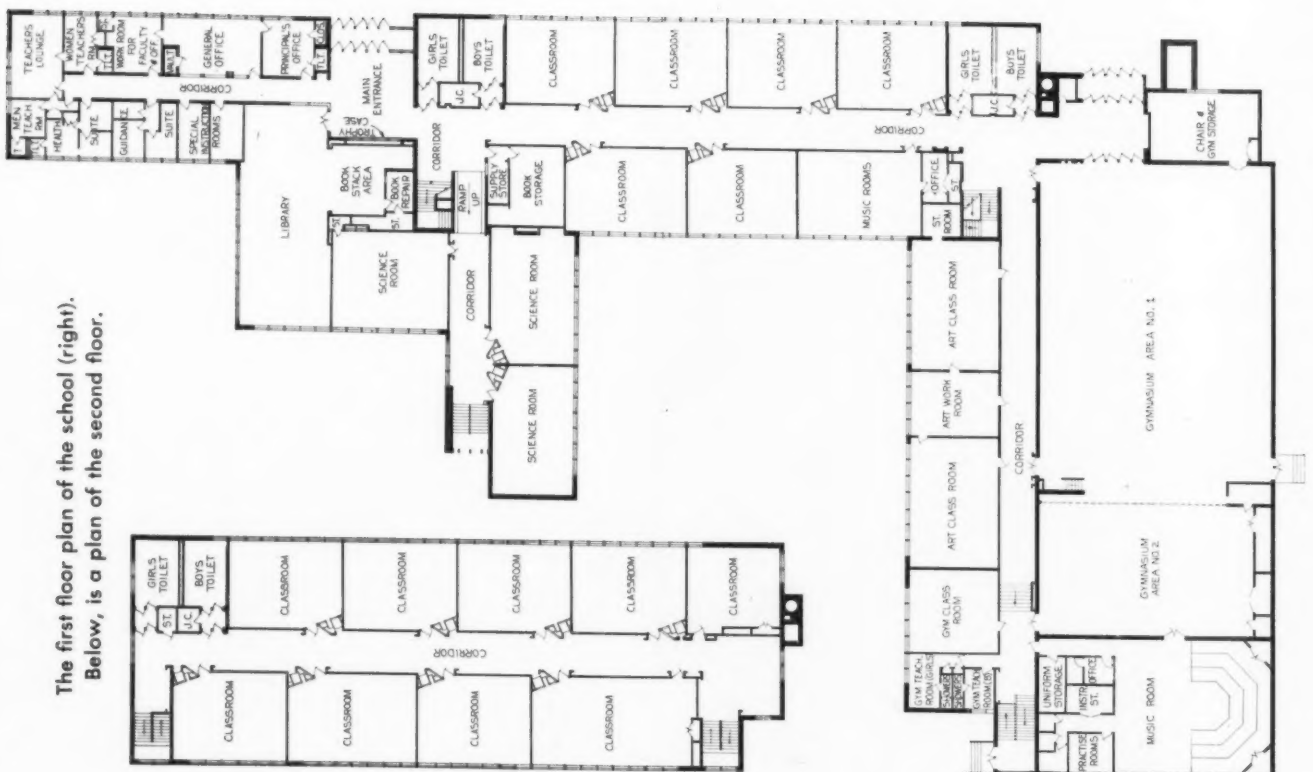
Waukegan City school district No. 61 consists of grades kindergarten through eight. The community has been growing at a rapid rate during the past ten years, during which time eight new schools and five additions have been built. Two of these new schools have been seventh- and eighth-grade junior high schools. The Daniel Webster junior high school is one of these.

There were two important reasons for adopting this K-6, 7-8 type of organization. In the first place, all of the existing schools were too small to accommodate pupils of grades kindergarten through



A typical classroom — there are 18 in the school — is shown at the right.

The first floor plan of the school (right).
Below, is a plan of the second floor.



The ground floor plan of the Daniel Webster
junior high school.





The spacious library (above) has an adjoining office, book storage alcove, and workroom. The school's "cooking room" (right) and its homemaking room comprise the home living department.



One of the two "manual-arts rooms" in the school. The department also has a drafting room and office, storage, and finishing space.



The gymnasium-auditorium (above) and the cafeteria (below) of the Webster plant. The gymnasium has bleachers for 850 spectators, while the cafeteria can seat 420 per lunch hour.



eight. Additions would therefore be necessary. This was undesirable because some of these buildings were quite old and in almost every case the play area was too small. In the second place, the seventh and eighth grade junior high schools seemed to offer significant educational advantages over those available to the pupils of these grades in the K-8 schools.

Planned Economy

Waukegan is not a city of great wealth. It has been described as "an industrial city without industry," as much of the industry is located just outside the city limits. The assessed valuation of the city school district is \$162,418,290. There is a bonded debt limitation in the state of 5 per cent of the assessed valuation, which means a bonded debt limit of a little over \$8,000,000 for this school district. While the present bonded indebtedness of \$4,564,000 is well

within the legal limit, the total tax burden to local property owners is heavy. (They are also helping to pay for a new four-and-a-half million dollar high school building program.) The administration, the board of education, and the architects (local firms in every case), therefore, have been exceedingly cost conscious in planning new school buildings, and have made very special effort to give the community functional and durable school buildings at minimum cost.

The Daniel Webster junior high school is one good example of this "planned economy without sacrifice of quality" in schoolhouse construction. This school was a part of a program which also included another similar school on the other side of the city, one new K-6 school, and a six-room addition to another K-6 school. The total cost of this program was \$2,673,000. Of this amount, \$986,000 was earmarked

for the Daniel Webster junior high school. The contract cost per square foot was \$11.40; the cost per pupil was \$1,061 for 840 pupils.

It should be added, however, that the amounts stated above were not sufficient to complete the equipping of the building. The board of education has had to spend the remaining \$40,771 of the \$986,000 bond issue plus an additional \$83,000 out of local funds to have a building completely equipped. The total cost of the Daniel Webster Junior High School complete with equipment, therefore, is \$1,069,000.

In the early planning stages of this building program a citizens' committee was organized. Every organized group in the city was invited to select a representative to serve on this committee. It was a committee of some 50 citizens. This committee helped to decide what would be included in this particular program, what facilities would be included in each of the buildings, and then organized a speakers' group to present the program to the public over a period of some three months prior to the referendum. The referendum was successful by a margin of about two to one.

Facilities Provided

Daniel Webster was designed to provide a well-rounded junior high school curriculum. Facilities for this program include 18 "general" classrooms, two art classrooms and an art workshop; a three-room home-economics suite; three science laboratories, an industrial-arts department of three shops; a "band music" section of one band room, one group practice room, three individual practice rooms, an office, and uniform and instrument storage rooms. Also provided is an administrative and counseling suite consisting of eight offices, two clinics, three guidance rooms.

Two gymnasiums, one large and one small, are placed so that the second gymnasium can double as a stage area for the larger area.

Construction Materials

Daniel Webster has a concrete foundation and steel floor joists with concrete slabs. Exterior walls are masonry with a face brick and limestone trim.

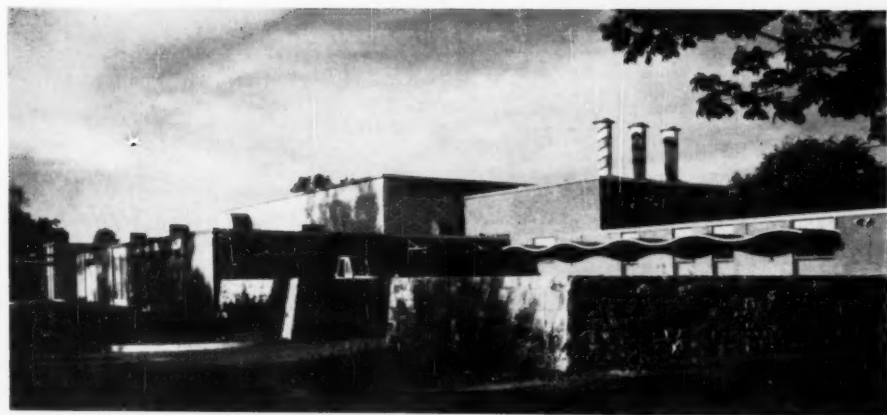
The classrooms and academic areas have painted block walls, asphalt tile floors, acoustical tile ceilings, and fluorescent lighting. Corridors, stairs, and the gymnasiums have a face brick wainscot with painted block above; the flooring in the corridors and stairs is asphalt tile, in the gymnasium and the stage areas maple. The toilet rooms and shower rooms have ceramic tile floors.

The heating system in the plant is hot water supplied by an oil-fired boiler. Unit ventilators are located in all rooms.

In our post-war swing away from function-less ornamentation in school design, have we gone too far? Is it possible one touch of color or art would mean that—



Our Functional Schools CAN Be Beautiful!



WILLIAM F. R. BALLARD

Ballard, Todd, and Snibbe, Architects, New York City

First, a definition: A functional building is a building which operates well to achieve its purpose. A functional school building is one in which the teaching process goes on smoothly and easily, the classrooms are well related to each other and to other parts of the building which are themselves put together in a logical way.

The function of a school building, moreover, is to be pleasing to children and teachers and to make learning pleasant. From this point of view, beauty itself has a purpose and must therefore be considered functional.

Functionalism and Aesthetics

Our job, as architects, is to design functional buildings with an eye to aesthetics. This may be achieved by putting a building together in a thoughtful and beautiful way and by using its necessary parts for aesthetic expression. We are not implying that a building should be any less functional in order to be aesthetically appealing.

Too often functionalism has become something that actually "prohibits" a beautiful building. If one simply puts functional requirements together, without a sense of discipline, the building will probably look like a hodgepodge. There must be a marriage between function and orderliness to achieve a successful result. It once was popular to put a façade on a building and then plan the interior to match the façade. The functionalists came along and said, "Design the interior first and then make the façade express it."

But if this façade is no more than a direct reflection of what goes on inside, the elevations could jump all about — big windows in some rooms, small ones in others. A certain amount of discipline in spacing and arrangements must be a part of any good plan so that an orderly functionalism is achieved and, at the same time, serenity and beauty.

Now to get to details, and to illustrate our belief that decorative elements of a building may stem from and be a functional part of a building itself, we would like to describe a school recently completed by this office — the Westover Elementary School in Stamford, Conn.

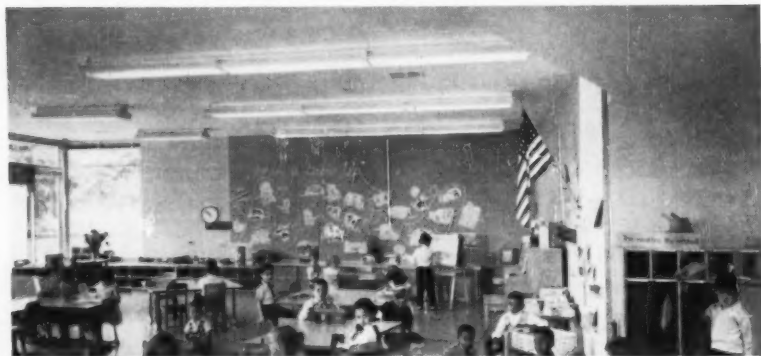
The Candy Stick School

Westover, sometimes known as the "Candy Stick School," is so designed that the child sees only a small portion at any one time. He is not confronted and overwhelmed by a great mass of building. This design approach makes for a much more human scale — almost a childlike scale — and brings the building into focus to his size. When he goes inside, since the school is one story with a relatively low ceiling height, the feeling of childlike scale is maintained.

How inexpensive decorative elements in one school's design made the school pleasing and inviting in appearance without diminishing its usefulness . . .



The inner court and typical classroom of Ballard's Westover, "Candy Stick" school in Stamford, Conn.



This scale is also desirable for the teachers—mostly women and, of course, smaller than the average male. The essence of the school is to relate as closely as possible to the child's world, without being a Disneyland. When the child sees the bright colors, he relates them to pleasant experiences. The teachers react well, too, when they are given a pleasant and functional atmosphere in which to work. The teacher reaction at Westover has been excellent—they take great pride in their school.

A feature which gives Westover the nickname of "Candy Stick School" is the design of its three smokestacks in colorful spirals. The smokestacks had to be there anyway, so why not make them playful and attractive? In order to make them appropriate for a children's school, and pleasant and happy for children to look at, a design reminiscent of candy sticks seemed an ideal solution. The children love them, so do the teachers and the whole town.

Another necessary part of any school building is the series of fresh air ventilators located on the roof. Too often these ventilators are not considered a part of the architecture of the school and are located independently by the engineer. These are an integral part of the building and must be designed into the building as part of the architecture. In the case of the Westover School, which is one story high, located in a valley and viewed from above as part of the community landscape, the location of the roof ventilators is of extreme importance—so it was essential to make them part of the building's architectural and decorative expression. The ventilators were painted in amusing and complementary colors and the whole roof area, when one looks down upon it, is a pleasant, gay sight.

This same use of complementary colors on the building's exterior is applied to the many doors leading from classrooms to play yards so that instead

of doors being monotonously drab, they, too, carry out the same playful expression.

The mass of the gymnasium which rises from the center of the school has been surfaced with glazed, ceramic blocks in alternating darker and lighter pattern, to give a feeling of lightness in contrast with the brick used for other areas of the building.

The canopy on the loading platform had to be a part of the building for protection of materials and people unloading during wet weather. It became a part of the over-all expression by use of a blue plastic canopy in a playful undulating pattern.

The Interior's Motif

Inside the school, in the gymnasium, the whole decorative motif is again achieved by the necessary parts of the gymnasium construction. The roof trusses are exposed and painted bright yellow and the heating pipes which lead to the unit heating ventilators are exposed and painted a clean light orange. Against the clear white of the underside of the roof deck, this gives a very pleasant combination of colors. All of these elements of the room had to be there.

In each of the school's three primary wings, islands of coat lockers were built in blocks and gaily colored, each locker with its different and separate color. These lockers are used as dividers between the teaching and circulating areas.

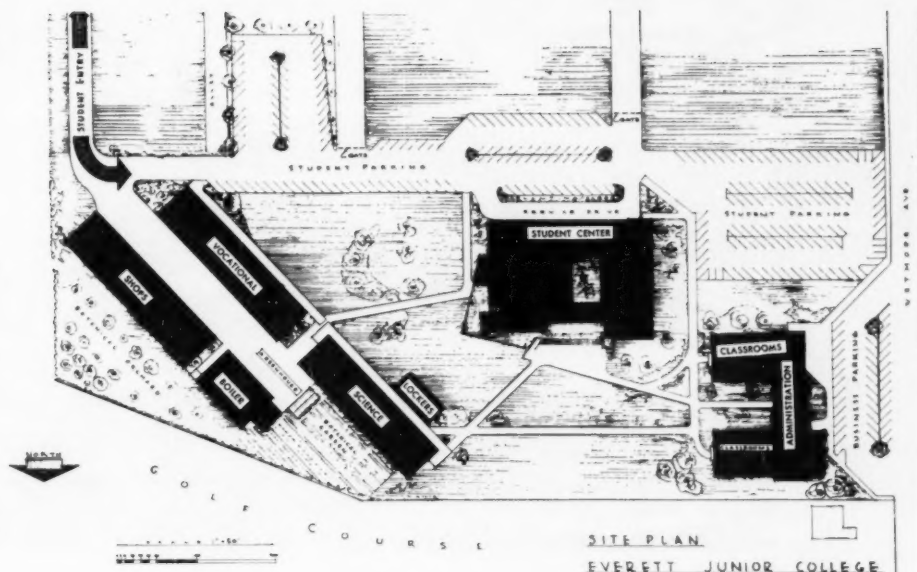
Three walls of each classroom are covered with tackboard which means that the teachers and children can control their environment. They can put up anything they want. This was built into the school so that their own decoration takes over when the architect leaves. The architect's function stops when the school is built and the teachers and students continue and complete the job for themselves—every year, in every season.

Westover School has no applied art, painting or sculpture for, in this case, the architects attempted to achieve a satisfactory aesthetic result through the media of the essential parts of the building itself. Often it is desirable also to use painting and sculpture to enliven and beautify school structures. Such applied art should be the product of the thoughtful care of the artist and the architect working together.

But basically, it all gets back to what was said at the beginning—a functional building can be a good looking building without losing its usefulness simply by proper care in the design of its various parts and details. Each part serves a useful function in the building and careful design gives it aesthetic value as well.

SCHOOL PLANNING

This complete report
on planning the
outstanding
Everett, Wash.,
Junior College
offers you
"working guide
lines" toward—



Planning Community-Junior Colleges

FREDERIC T. GILES, S. V. MARTORANA, and D. GRANT MORRISON

From Florida to Alaska, from New York to California, the community-junior college is being recognized as the best single solution to the problem of serving the rapidly growing demands for post-high-school education. Florida is projecting six new community-junior colleges this year; California and New York have each approved three more; Michigan and Illinois are considering long-range plans that propose between them almost 50 new two-year colleges. Most of the other states of the nation are investigating the possibilities that this kind of institution holds for helping them meet the "rising tide of students."

Unfortunately, there is a dearth of information on how to build facilities to house this new type of collegiate institution. Too frequently, the buildings are constructed and then an attempt is made to tailor a program to the building—unnecessary limitations usually result. Often the high school is used as a model or the traditional type of collegiate building planning procedure is followed. In either case the result leaves much to be desired. The fivefold role

usually assigned to the community junior college cannot be confined within a plant modeled to meet the needs of either just a high school or a liberal arts

President Frederic T. Giles is head of the Everett, Wash., Junior College. Dr. S. V. Martorana is Chief for State and Regional Organization, Division of Higher Education, U. S. Office of Education; D. Grant Morrison is Specialist for Community-Junior Colleges, Division of Higher Education, U. S. Office of Education and former Washington State Director of State Colleges.

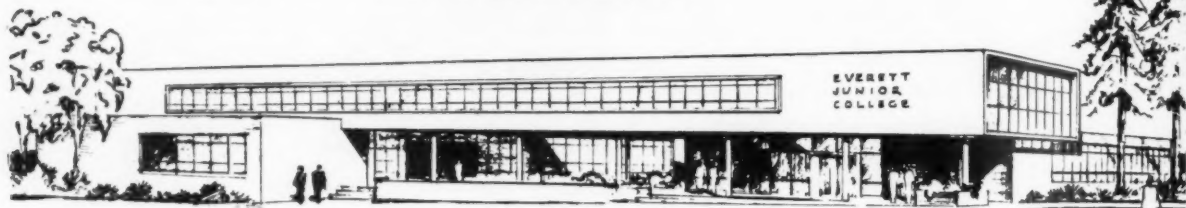
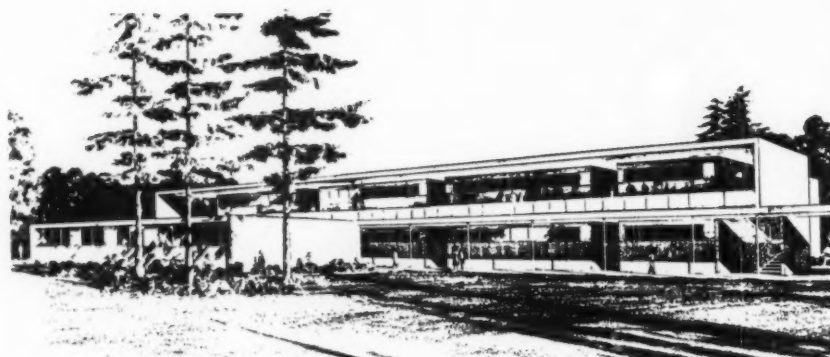
college. The five purposes of a community-junior college are those that are attached to the following groupings of offerings: general education for all students who attend; preprofessional courses in the arts and sciences for all students seeking the bachelor's degree; organized occupational studies leading

directly to employment after the two-year college; adult education and community services; and student personnel and guidance services to help students make wise and realistic career choices and personal decisions.

This article will attempt to describe briefly how one junior college carried through the planning of its new buildings and long-range campus development program. The process took over seven years and involved architects, educational and building consultants, administrators, and faculty and lay participants. Each was encouraged to work in his area of greatest competence and to refer to others any problem not within his own areas of experience and training. The construction program is proceeding according to the plans that have been projected and occupancy of the new campus will occur in June, 1958.

General Background

Everett Junior College is located in Everett, Wash., a growing industrial city of approximately 35 000 people,



Sketches of two of the buildings of the campus-planned community-junior college, Everett, Wash. —Harold W. Hall, architect, Everett, Wash. At the left is the two-story science building and below is the central administration and classroom building.

located 30 miles north of Seattle. Everett is the county seat; it has good harbor facilities, is a distribution center, and is the home of several of the largest lumber mills in the state. A considerable number of the residents work in Seattle and in the growing oil industry to the North.

In the fall of 1957, Everett junior college enrolled 2350 students with 1123 full-time and 1227 part-time. Since its establishment in 1941, the junior college has been operating as the 13th and 14th grades of the public school system of the city of Everett. This is in accord with the general junior college laws of the state of Washington. The buildings, composed of a former elementary school and a large number of assorted war surplus buildings, have been overcrowded for at least eight years. In spite of this handicap, Everett junior college has gained acceptance by its constituency and is gradually becoming the educational and cultural center of the community. Each year there has been growing recognition of the fact that the continuance of the fine services of the college necessitated a new plant on a new site. This is evident from the history of the local bond issues, the character of the publicity given the college, and the generally popular enthusiasm that has been expressed for the new building program.

Beginning Steps

Long before there was any possibility of obtaining the necessary funds for the new site and buildings, the staff and administration of Everett junior college began working hard on the study and

analysis of the type of campus site and buildings which they felt their kind of institution would need. President J. F. Marvin Buechel, who was head of the institution at that time, deserves much credit for his insistence that the buildings should be designed and planned to house the program needed by the local community, and for leading all of the staff toward sharing enthusiastically in their projection. President Giles, his successor, continued to work on the basis of these principles, emphasizing the need for all to recognize the purposes of the community-junior college before even tentative plans were drawn. Superintendent Charles McGlade and the Everett school board assisted the planning in every possible way.

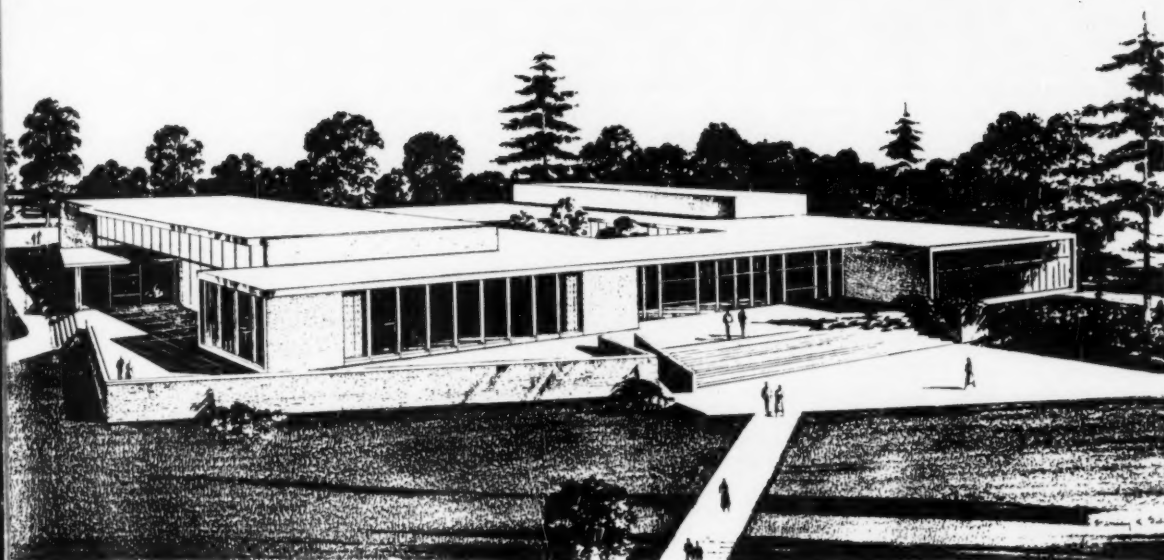
Junior college and building consultants were invited to confer with the Everett leadership early to aid the staff in identifying the needs of the community and in supplying technical counsel on matters relating to the site-size and over-all program and building planning. From the office of the state superintendent of public instruction, the state director of junior colleges (then Dr. D. Grant Morrison) came to the college to discuss the state office regulations, legal procedures to be accomplished, and similar matters. By special contract with the school of education of the State College of Washington, the consultant for junior colleges (then Dr. S. V. Martorana) was brought in to work with the staff on a continuing basis for two school years to plan staff organization, to project program planning, and to help faculty committees in special areas such as library and laboratory.

This proved to be of considerable advantage in acquainting the state officials and the community in general with the high priority of need, and in organizing the staff to interpret the building needs to the public. It gave specificity to the planning and made it possible for the local school administration to secure an estimate of the amount of state assistance that would be available for particular types of buildings and in understanding of the types of items that were ineligible for state-matching funds. For example, from this preliminary study came the working acceptable minimum standard of space needed per student for building a complete junior college plant; the standard determined was 140 square feet per student.

Citizens Advisory and Faculty Committees Organized

The selection of the new site for the college was an important decision and part of the planning. In this critical decision the role of the college's citizens advisory committee was influential and helpful. The committee helped actively in surveying possible sites. The members of the committee held several sessions with the architect to gain technical advice on the advantages and disadvantages of building a new campus on sites that were under consideration. After much study, the committee met with the board of education and presented its recommendations.

With the co-operation of the superintendent of schools, the president of the college, and the outside consultants, faculty committees were established to



Sketch of the campus center, left. Below is a floor plan of the building, showing the rest areas placed around an open court.

work on each of the parts of the building program. Wherever there was to be joint use of a facility by staff members from several departmental areas, the representation of the committee included all of the staff members concerned.

Herein lies much of the answer to the success of the program at Everett junior college. The staff groups approached the opportunity to express their professional creative imaginations for the new buildings with the zeal of real artists and pioneers. No limits were envisioned or asked for in their quest for information and research efforts. They worked tremendously hard to create "our dreams of a good community-junior college" — not just a replica on an Everett site of a good two-year college developed somewhere else. As a result, they can truthfully and proudly point to the decisions listed at the end of this article as their decisions, the products of their minds and energetic efforts.

The architect for the building project was hired and asked to provide technical advice on how the building could be most economically, functionally, and attractively designed to provide the services needed. This arrangement proved to be especially valuable in helping the staff committees see their concepts translated into sketches that illustrated the merits and weaknesses of their ideas and to visualize the unitary nature of a college campus development project. Frequently, the architect attended the staff meetings at which were discussed the educational and psychological arguments advanced by the working committees



to support their recommendations.

Working Guide Lines

From the foregoing committee working structure and the discussions surrounding their presentations to the total staff, there emerged a number of guide lines or principles that were followed by each of the working groups. These were not expressed in formal or written terms, but nonetheless were influential in setting the "ground rules" whereby the work of building planning progressed.

1. **Faculty.** Your major contribution will be in drawing up the educational specifications for your part of the building. Keep questioning and explaining until agreement and understanding are reached.

Be realistic in your space requests, indicating clearly how you plan to use

the space requested. Take time to evaluate your needs in lighting, storage, amount of space, kind of space, orientation within the building and relationships to other programs.

The building is not designed primarily for you. You come third: first the student, then the program, then you.

2. **Administration.** The administration has the responsibility for providing the leadership in planning. To be most effective, it is essential that you establish a friendly climate in which discussion can be held freely.

You have a responsibility for bringing together the architects, the educational and building consultants, the faculty, the lay and professional committees, and the students to consider the problems attendant to building planning, and for indicating to each of these

groups the general nature and major priorities of the decisions to be reached. Your leadership will be challenged to bring from these several groups a meeting of minds and decisions that will result in a co-ordinated and realistic campus development plan. You will not be doing a satisfactory job if you allow the faculty to design the building, the lay committee to decide the program to be carried out, or the architect merely to draw out from his folio building plans that were satisfactory under other conditions.

You have the final decision to make after all of the discussions are completed. It is essential, therefore, that all groups and individuals understand the limitations within which they must work and the priorities which are going to be used in the final decisions. In no other way can a satisfactory and harmonious solution be reached.

3. *Architects* become involved in all

phases of planning to understand thoroughly the general as well as specific purposes of the institution, the educational relationships of the several parts of its program, and the types of space needed for each program. Expect to spend considerable time with faculty, administration, outside consultants, professional and lay committees listening, interpreting, and advising.

Be assured that within monetary limitations you will be given the greatest possible freedom in *how* the building will be constructed. Your originality and initiative are encouraged as you are expected to provide an attractive and functional building.

Check constantly to see that there is mutual understanding. Use mock-ups and visual aids, such as scale models and sketches, to assist in showing how the proposed units will look and function.

Check existing plant with staff and administration to discover the flow de-

sign of traffic and the relationship of programs, one to another.

While the final decision will be made by the board of trustees and its administration, your attitudes and activities can do much to provide harmony, understanding, and ultimate satisfaction with the results of the building program.

4. *Students.* This building is being planned for you and those who will be in your places in years to come. You have a special contribution to make in terms of helping to plan student personnel services and the facilities needed to house these services. Give willingly and generously of your time in working with the committees and speak your ideas freely to insure that the best possible buildings will be constructed.

5. *Lay Citizens Committees.* You are in position to know the educational needs of this community much better than anyone else. Individually, you can list the requirements in terms of the junior-college courses and programs for yourself, your children, and your neighbor's children. As a group you can help evaluate not only what is needed but the proportionate amounts as well. What should be the scope of offerings in the area of arts and sciences leading to transfer to upper-division study in other colleges and universities? What should be the scope of offerings in the area of organized occupational fields leading to employment after junior college? What emphasis should be placed on community service programs and adult education? What types of offerings should this emphasis produce? What programs can the junior college offer to assist in training the future leaders of industry and government in this community, the heads of the families of a new generation, the citizens of tomorrow's society? What is the total over-all picture of post-high-school educational needs?

Be careful to check your opinions and beliefs against the facts available from labor, management, occupational surveys, and school officials. If the facts are not yet available, assist in gathering them and working closely with persons versed in statistical and informational procedures to see that the information gathered is in reliable and usable form.

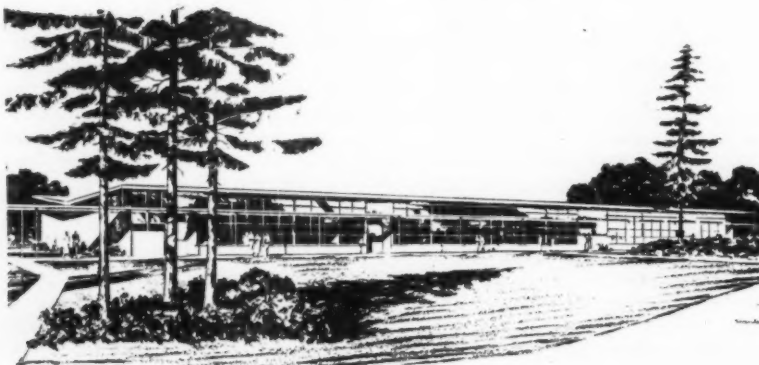
In general, you are not qualified in the fields of architectural design or constructional planning. You can be of great value in the planning of this building if you limit your contributions to those areas in which you are the best informed member of the planning committees.

General Procedures

In resolving decisions and developing the preliminary plans for the buildings, the following sequence of operations was used:



Floor plans (above) and exterior view (below) of Everett's vocational buildings. Together the buildings have 22,600 square feet of space.



1. Agreement was reached that a certain program should be included in the services offered by the college. Lay and professional committees, students, faculty, and administration had an opportunity to discuss this matter and to make recommendations.

2. A faculty committee prepared a list of questions which it wished to have answered in relation to the housing of this program. Sometimes there were 40 or more questions raised involving the type of activity, the number of students, the hour at which the program was to be offered, the relationship to other programs, and other similar considerations.

3. These were discussed with the architect and the administration so that all concerned would appreciate the scope of the program and the problems involved in housing it.

4. The architect would make several tentative sketches which he would later present to the group, indicating to them the advantages and disadvantages of each, their relative cost, the elements of inflexibility in each, and the problems of a technical nature which he saw in terms of light, heat, and ventilation.

5. The architect would prepare a scale model of the space recommended, including in it a model of all of the furniture expected to be used.

6. These results would be compared with an existing classroom so that there could be an accurate understanding of the amount of space and the flow-pattern of traffic. Frequently this resulted in discarding the tentative plan or changing it appreciably.

7. After several of these units had been completed for the time being, a meeting would be held to see the relation of units — one to the other, the possible location in an over-all plan, and the type of structure that would be most suited to the site and to the community.

8. Considerable emphasis would be placed on flexibility within and without the building, and expansion units would be inserted wherever a growing program indicated the need. For example, a second laboratory would be designed where only one was immediately needed. The space would be temporarily used for some other purpose, but the utilities would all be "roughed in."

9. Careful attention would also be given to such inflexible items as bearing walls, plumbing, corridors, and stairs.

10. Preliminary drawings would be made and scale models prepared, showing the entire campus plan for immediate and future construction.

11. These plans and models would then be discussed again with the building specialists in the state office to receive their suggestions and evaluations.

12. Any suggestions adopted would be included in the plans and the scale models would be modified accordingly.

13. After each of these steps, the plans would be referred back to the recommending committees. The board of education and its administration would make the final decisions and instruct the architect to prepare the final plans.

The procedure described above re-

quired over seven years to complete. It required hundreds of hours of conference, outstanding leadership by the administration, the greatest skill of the architect, and utilized to the utmost all of the assistance of building consultants and lay and professional committees.

Decisions Reached at Everett

If any one decision reached at Everett were to be singled out for special advocacy to other community colleges, it would be the one centering on the word "flexibility." It, itself, was the first and foremost decision reached: that the campus arrangements and buildings must be adaptable to meet changing community needs. This concept of flexibility then entered into and influenced all of the other decisions made. These can be listed as follows:

1. Flexibility will be given first priority in decisions relating to design and structure. This includes both flexibility in the total campus arrangement and flexibility within buildings.

2. The buildings will, in general, be of free span construction with only the outside walls bearing, thus providing maximum flexibility.

3. The corridors will be located on the outside of the buildings wherever possible to allow for freedom of expansion within the buildings and the roofs extended to provide covered walkways.

4. For the most part the lavatories and locker facilities will be separate from the buildings (for the same reason as applies above to corridors), but easily accessible to several buildings.

5. Expansion units will be planned within the building. In one case this will be an additional laboratory, complete except for furnishings, and used temporarily as a drafting room. In another case it will be classroom space, subdivided temporarily to provide additional faculty offices.

6. Odd-shaped and specialized rooms will be kept to an absolute minimum, because basic rooms are more adaptable to change and expansion.

7. Classrooms will vary in size, but most will be designed for 25 to 35 students, with a few large enough for classes of 40 to 50. Lecture rooms in the science building will be designed to accommodate two laboratory sections (approximately 50 students) at one time.

8. The completed campus will be arranged with classroom buildings radiating in concentric semicircles from the student center building — each of these semicircles on a lower level than the preceding one. This arrangement allows for future expansion without losing the original campus relationships.

9. A priority list will be established for construction: all units immediately necessary will have the top rating, and the remaining units will be rated in accordance with the urgency of their need. Building arrangement will be such that ample space

will be left between buildings for future additions to the campus.

10. All out-of-class facilities (library, student lounge, bookstore, cafeteria, etc.) will be located together at the hub of the campus for greatest convenience and efficiency.

11. In general, the buildings will be one story in height, of a type of architecture to blend in with the rolling terrain of the site.

12. The science and administration-classroom buildings, however, will be two stories in height to get all departments in proper relationship in the first semicircle of buildings, to fit the contours of the site, and to leave room on the campus for future expansion.

13. There will be no car traffic between buildings on the campus, and all car entries and parking areas will be on one side of the campus. Parking areas for students will be located close to the campus center building and those for faculty and business cars near the administration-classroom building.

14. Landscaping of the campus will be planned in conjunction with the needs of forestry and botany programs so as to be useful as well as decorative.

15. No stadium will be planned on this site, as an excellent civic stadium is available. A physical education plant will be included and arrangements made to utilize the adjoining tennis courts and the 18-hole golf course.

16. There is no immediate need for a large auditorium as the civic auditorium is available for any large audience.

17. Because the stadium and auditorium will not be on the campus, the 40-acre minimum for junior college sites can be pared down to 25 acres, especially since the golf course adjoining the campus adds spaciousness and prevents encroachment of other structures.

Results: A Current Summary

Present construction calls for seven buildings on slightly more than sixteen acres for main campus building adjoining ten acres for physical education. The buildings in the total project under construction are: administration-classroom, science, campus center, two vocational and technical, heating plant — receiving and storage building, and a physical education plant. Facilities planned but not constructed are: a classroom building; a music-speech-arts building, which will include an auditorium; and a swimming pool. The buildings under construction are approximately 138,000 square feet in gross footage. The present construction costs are \$1,945,575, including tax and architect's fees. This contract includes grading and leveling of site, sidewalks, all parking areas, black topping, campus lighting, fire hydrants, yard drainage and sewer, as well as drapes and blackout drapes and similar fixed equipment on interiors. The cost per square foot is \$14.11.

Recent Trends in

Revenues for public schools* have been increasing over the past ten years along with increases in population and the general prosperity. Rates of increase have varied but we have experienced a continuing upward trend. Almost every index of business and economic activity has been rising in response to expansion and inflation pressures. Indexes of business activity such as the gross national product, employment, personal income, savings accounts, new construction, and home ownership are all at higher levels than formerly, and according to predictions, they will keep on rising to even higher levels.

Along with this general upward trend of business indexes, school revenues have risen to new highs. In the past ten years local school district revenues have almost tripled. State funds for schools have more than tripled and federal aids for the school program have increased more than fourfold. Total revenues for the public schools in this period have expanded from three billion to more than ten billion dollars annually.

State and Local Finance

This trend for school funds is also typical of state and local taxation revenues for public purposes other than education. In total, all state and local taxation revenues have increased in 10 years from 13 to 42 billion, more than threefold. Capital outlays by the state and local governments have increased from 2 billion to 12 billion annually, and the public debt of the state and local subdivisions has more than tripled in the ten-year period increasing from 16 billion to a present figure of approximately 49 billion dollars of state and local debt.

These rates of increase in state and local financing are much greater than similar rates of change for the Federal Government over the same period. They

imply a rapid shift of emphasis toward public financing by local and state governments and less emphasis on financing by the Federal Government. This is an important change indicating that the states and the local subdivisions are assuming stronger positions in financing peacetime public services.

Sources of School Revenue

Schools are supported by revenues from local, state, and federal sources. The proportions at the present time are approximately 57 per cent, local; 39 per cent, state; and 4 per cent, federal. Through recent years the proportion from local sources has been decreasing, the state proportion has been increasing, and the federal proportion, although very small, has also been increasing. While the state proportion has been rising for many years, this trend has apparently been stopped and more recently the states are providing funds which remain near 38 per cent of the total revenues for the public schools. The decline in the per cent derived from local sources seems to be due to difficulties with the local property tax and to the impression that it has been overburdened. It is also due to the greater ease with which additional revenues can be provided by the state from non-property tax sources.

Revenues From Local Sources

Constitutional provisions and laws established many years ago make it difficult for the property tax to meet rapidly changing conditions. In view of these legal restrictions, the general property tax is unable to keep pace with other kinds of tax revenues coming from business activities. The failure to keep pace is associated with low assessments of property, inequitable assessments, tax rate limitations, restrictions on voting levies, and exemptions of certain kinds of property from taxation.

Other kinds of tax revenues which are derived from business activities are

generally not available to local governments and to boards of education. They have been used by the state legislatures to collect revenues for state purposes. Rising proceeds of these state nonproperty taxes have allowed the state appropriations for schools and for many other purposes to increase at more rapid rates than local revenues. Comparisons between state revenues and local revenues indicate that the latter have been losing ground proportionately, even though the actual number of dollars derived from local taxation has increased.

Property Assessments

Increases in the actual yield of the local property tax are due to higher valuations and to higher tax rates. Property valuations for taxation purposes have increased through reassessment programs and through the addition of permanent improvements. Assessments have also increased in some states because of assistance given through state supervision of local assessment policies and under the influence of a few state programs of determining equalized assessments or assessment ratios. The publication of actual assessment figures along with the state determined true value assessments for comparative purposes induces local and county assessors to raise their assessments and to come closer to true values in determining property valuations.

Productivity of the general property tax is also being increased through state legislative action in authorizing higher limits on tax rates. Higher limitations have recently been approved in Iowa, Kansas, and Utah. Also, a few state legislatures have recently approved higher tax rate limits specifically for the establishment and operation of community colleges as extensions of the systems of public schools.

The general property tax has also been increased through legislative action raising the debt limitations for local school districts. Raising the debt limit increases tax rates for schools because

*Adapted from an address presented by the author at the convention of the Association of School Business Officials, New Orleans, October 22, 1957.

SCHOOL REVENUES

CLAYTON D. HUTCHINS

Chief, School Finance Section, Office of Education

tax levies for debt service are usually authorized to be levied outside of other limitations established for current operating levies. Some of these limitations on debt have been increased permanently and in other states the maximum debt limit has been raised temporarily for a specified period. Debt limitations in Idaho and Ohio are examples of higher limits on debt approved for a definite period.

Local Nonproperty Taxes

In recent years, new kinds of local taxes, in addition to the general property tax, have been levied. These are called nonproperty taxes since they are based upon business transactions and factors other than property. They are similar to those which have been levied chiefly by state governments but they apply to local governmental subdivisions including cities, counties, and local school districts. These local nonproperty taxes include per capita taxes, severance taxes, taxes on incomes, amusements, sales, deed transfers, hotel occupancy, and various other kinds.

Several states including New York, Pennsylvania, and West Virginia in the east, Illinois in the central, Louisiana and Mississippi in the south, and California in the west, have been authorizing nonproperty taxes for use by local boards of education in balancing their annual budgets. In Pennsylvania, over 400 communities now have local income taxes and more than half the school districts have one or more kinds of local nonproperty taxes. These nonproperty tax levies are reported to be supplying from 5 to 25 per cent of local school district revenue. West Virginia's experience with local nonproperty taxes for schools will probably increase in the next few years as the counties begin to use the \$10-per-adult inhabitant, per capita tax and the deed transfer tax recently approved by the state legislature.

Nonproperty taxes are spreading and they are attracting much attention, but there is some question as to whether

they constitute an adequate solution to the school revenue problem. Specialists in taxation regard them as inefficient for this particular purpose. The taxes are levied for relatively small areas such as cities, counties, or local school districts. This means that expenses of administration, enforcement, and collection, are proportionately large when compared with the proceeds, or when compared to similar expenses for state taxes.

Although the local nonproperty taxes are considered to be unsatisfactory and inefficient, they are being used more and more for purposes of balancing the local school budgets. This is probably due to difficulties the boards of education have in securing funds from the general property tax and to inadequate appropriations of state funds for the schools. Readjustments between local revenues derived from property and from nonproperty taxes may be a part of the long-range trend of the present period.

Revenues From State Sources

State appropriations for the operation of schools have been increasing substantially in past years. In addition to keeping up with inflation, the state legislatures have tried to appropriate sufficient funds to partly relieve the burden on the local property tax. Most of these state funds have been allotted to local school districts through the operation of the foundation program plan for school support.

States have also increased their appropriations for school construction. Various plans are in use. Grants for school construction have been made in some of the states. Other states have loan funds for this purpose with provisions that the loans be repaid over a period of years. Combinations of loans and grants have also been approved in which unpaid portions of loans may be canceled under certain conditions.

State schoolhousing authorities have also been established with authority to

borrow funds, erect school buildings, and rent them to local school districts. This plan secures new buildings which become the property of the school districts after some years of rental payments. It is considered to be more expensive than the usual plan of issuing local district bonds but it does secure more classrooms. In Pennsylvania and Georgia, the state housing authorities have been successful in securing many new school buildings. Classrooms have probably been provided earlier than they could have been financed through the regular procedure of issuing school bonds by the local school districts.

State legislatures appear to have given more than usual attention to problems of financing the schools in recent years. Ten years ago, approximately 21 per cent of the state appropriations were for school purposes and now, about 27 per cent of the state tax collections are being used in the public school program. This implies that the state legislatures have made a consistent effort to appropriate funds for schools requested by the state departments of education.

Revenues From Federal Sources

Like local and state revenues for education, federal funds for education have increased over the past 10 years. Important increases have been noted in federal funds for vocational education, for the school lunch program, and for assistance to the federally affected school districts.

Federal appropriations for vocational education have increased about 50 per cent in 10 years. For the school lunch program, federal assistance, including both funds and commodities as well as the new school-milk program, has been increased about threefold in the 10-year period.

A larger increase in federal funds for schools is in the appropriations for the operation of schools and for the construction of new schools in the federally affected school districts. This program has been expanded to include

A Look to the Future in School Finance —

School revenues must double the present amount in ten years . . . this goal is not difficult — provided we can shift from outdated procedures and gear our educational program to present-day national economic potential.

approximately 3500 or about 7 per cent of the school districts of the nation. The increase for federally affected districts accounts for most of the expansion in federal funds for schools over the past 10 years.

School Revenues Are Inadequate

Revenues for schools from local, state, and federal sources are increasing but the funds available are still not sufficient to enable boards of education to pay reasonable salaries to the teachers, to meet the additional expenditures required for larger numbers of students, and to provide for the construction of an adequate number of new classrooms.

Salary schedules for teachers should be increased to help teachers maintain purchasing power, to help boards of education with the problem of teacher shortages, and to help in their employment of qualified teachers replacing those having substandard certificates.

Larger expenditures are also required to operate additional classrooms needed for the larger numbers of pupils. Enrollment figures have been increasing because of higher birth rates in the war and postwar periods, and because more pupils are continuing in school for a longer period of years.

Larger expenditures are also required for the construction of new classrooms to house the additional children, and to replace obsolete structures, which normally would have been replaced some years ago had it not been for the material and man-power shortages.

Inadequacies of past revenues for the public schools were recognized by the 1955 White House Conference on Education. Discussion groups at the conference concluded that large increases were long overdue and must be provided in the years immediately ahead. In its final report the conference said. "It seems obvious that in the next decade, the dollars spent on education in this nation should be approximately doubled."

Revenues Can Be Increased

Economists and taxation experts writing and speaking in reference to increases in revenues for schools have given assurance that the additional support will not be burdensome to the economy nor to individuals. On the contrary, more adequate funds for education will help to increase business ac-

tivity and productivity of the nation. Even though double the present amounts are expended for education in ten years, the total is expected to be a smaller proportion of the gross national product than has been used for education in the past in view of the anticipated growth of the economy.

To participate fully in the productivity of our economy in the future, it appears that the schools should plan to obtain more of their revenue from taxes on incomes, both individual and corporate incomes. This means that increases should be expected from state and from federal resources since local school districts have only limited possibility of tapping the income tax source.

An important reshaping of the local-state-federal taxation program is taking place in present trends. New relationships between taxation for schools and for other expenses of government will be evident as the nation continues full employment and economic growth. State and local governments should associate their revenue programs with these factors so that greater reliance for school revenue is placed upon sources which are responsive to business activity.

School administrators need not be hesitant about discussing the budgetary requirements of the educational program and to indicate the amounts of money needed to provide certain kinds and levels of service for the school children. However, suggestions as to proportions of the required funds to be derived from various sources may well be left to the legislatures, boards of education, and to the people. Taxation reforms come slowly. School executives can help most by keeping the public informed regarding the benefits derived from expenditures for education and by preparing comprehensive school budgets with clear explanations of the significance of the budget items for the children of the community.

National Survey of School Finance

To assist those who are responsible for this great task of arranging for double the revenues for schools in the years ahead, a thorough study of national, state, and local plans and procedures for financing education is needed. A comprehensive survey of school finance, conducted in each state, analyzed and summarized nationally,

could reveal the problems facing the state and local communities and could suggest solutions to these problems of financing the public schools. Facts on sources of revenue, amounts derived from these sources, methods of making the funds available to the schools, budgeting, expenditure procedures, and the effectiveness of these expenditure, gathered from all the states, and made available in a national report, would be very valuable in adjusting school finance plans to the kind of economy we are to have in the next ten years.

Taxable values, production, and productivity in the nation are shifting rapidly. We need to adjust our finance programs so that school revenues, in proper amounts, may be derived more directly, more efficiently, and more satisfactorily to the people who provide the funds, from sources and according to methods which are more logical and well adapted to the national economy. This kind of comprehensive study of financing the educational program in the United States has never been made. In view of the school finance problems which obviously lie ahead, a thorough survey of methods of financing the schools is definitely needed.

In Summary

School revenues have been increasing rapidly in the past ten years, but the increases are not sufficient to enable boards of education to keep up with prices, to enable them to secure qualified teachers replacing those with substandard certificates, and to construct essential numbers of classrooms. In looking ahead, increases in school revenues will be large, reaching double the present amounts in ten years, but the task of financing the schools need not be as difficult as the amounts of money might lead us to believe, provided we can shift away from outdated procedures adopted decades ago and gear the educational finance program to the present-day economic potential of the nation.

To secure an improved program of financing the schools an extensive study and report on school finance would be most helpful to the national, state, and local school officials, to legislators, and to citizen committees, as they struggle with the present problems of providing teachers, classrooms, and instructional programs for our children.

What Does School Air Conditioning Cost?

... On the average,
about 75 cents per square foot
more than regular heating
and ventilation. This exclusive
report offers you data on what
air conditioning would cost
in YOUR schools!



An air-conditioned classroom in the Ethel Avenue elementary school, Los Angeles, Calif.

HENRY WRIGHT

Technical Consultant, Herman Nelson Division
American Air Filter Company, Inc., Louisville, Ky.

How much does school air conditioning cost? This is a little like asking, "How high is up?" But the question deserves an answer. School boards all over the country during the next year or two will be weighing the matter of school air conditioning. One of their most obvious elementary considerations will be cost. Is air conditioning a luxury item appropriate only to "gold-plated" schools, or does the fact that school-rooms require heating and ventilation so simplify the job of adding refrigeration cooling that this step is easily justified? What about the possibility that increased educational efficiency or fuller utilization of the school plant will more than make up for the cost of cooling equipment?

In this article cost figures for 17 schools scattered over the U. S. (in Arizona, California, Georgia, Illinois, Indiana, Kansas, Kentucky, Michigan, Missouri, New York, North Carolina, and Wisconsin) will be compared in an effort to furnish approximate rules-of-

thumb on the cost of school air conditioning, and the cost of providing for future air conditioning in new school buildings. In four of these schools bids were taken on complete air conditioning, which is actually being installed in three of the four. In seven cases, bids were received on systems designed to make future air conditioning a relatively simple matter, and in ten schools—used here to provide a basis of comparison—bids were taken on heating and ventilating equipment only, without provision for air conditioning.

All of the costs given are "fresh" figures for new construction bid during the past 18 months. All costs are for basically similar systems of heating, ventilating, and air conditioning: use of classroom unit ventilators automatically controlled and on a room-by-room basis and—where future air conditioning or complete air condition is involved—the use of air conditioning unit ventilators with similar automatic controls.

In one of the 17 schools, the Ethel

Avenue elementary school in Los Angeles, separate bids were received on (a) a basic heating and ventilating system; (b) basic heating and ventilation plus provision for future air conditioning; (c) heating and ventilation plus complete summer air conditioning.

In two of the schools, figures were obtained both on the cost of provision for future air conditioning and on complete cooling. Thus, various cost comparisons are possible both on a specific and average basis, and one type of comparison can be checked against the other.

Comparative Square-Foot Costs

Based on an analysis of cost figures for these schools, (see tables), it appears that provisions for future air conditioning with air-conditioning unit ventilators, special piping, etc., costs between 15 and 20 cents per sq. ft. in average new construction, or between one and two per cent of total building cost. Provision of complete air conditioning, by the same method, seems to

run around 75 cents per square foot over the cost of basic heating and ventilating equipment, and about 50 to 55 cents per square foot more than provision for future air conditioning. This works out to about 5½ per cent of average total cost, but the per-square-foot figures are the more reliable, since air-conditioning costs tend to vary a good deal less than over-all cost of construction.

Since the figures also indicate that a basic heating and ventilating system of

TEN SCHOOLS ON WHICH BIDS WERE TAKEN ON HEATING AND VENTILATION ONLY

School	Total Cost	Total Cost Per Sq. Ft.	Heating & Ventilating Cost Per Sq. Ft.	Per Cent of Total Cost
1	\$ 659,000	\$15.33	\$1.15	7.6
2	416,211	9.05	1.13	12.4
3	435,270	11.21	1.48	13.2
4	131,223	9.00	1.98	22.0
5	260,164	13.56	1.47	10.9
6	1,013,960	11.27	1.25	11.1
7	577,193	8.39	1.07	12.9
8	310,178	9.84	1.05	10.7
9	344,291	10.43	1.11	10.7
10	118,147	12.38	2.09	16.6
Average \$	426,564	\$11.05	\$1.38	12.8

the unit ventilator type costs, on the average, between \$1 and \$1.50 and, in exceptional cases, as much as \$2 per square foot, the indication is that complete air conditioning adds somewhere between 50 and 75 per cent to the average heating and ventilating contract.

Specific Examples

As already mentioned, the Ethel Avenue school in Los Angeles was bid on a "three-way" basis, producing comparable figures on all three systems. This is a 26-classroom, 43,000 sq. ft. building, with five administrative offices in a separate wing, which cost, with complete air conditioning, \$690,000, or \$16.04 per sq. ft. On the basis of bids received, basic heating and ventilation, unit ventilator type, would have cost, in this building \$1.15 per sq. ft. With added provisions for future air conditioning (air-conditioning unit ventilators, larger pipe sizes, pipe insulation, condensate drainage system, added controls), the cost was \$1.32 per sq. ft. or 17 cents per sq. ft. more. With the addition of complete air conditioning, the heating, ventilating, and air-conditioning cost was \$1.88 per sq. ft., amounting to 11.7 per cent of the total building cost and 73 cents per square foot more than for standard unit ventilation. Expressed on a percentage basis, the addi-

tional cost of air conditioning amounted to 62 per cent of the basic heating and ventilating cost, and 4.7 per cent of the cost of the building without air conditioning.

On a per-schoolroom basis, the added cost for air conditioning this school (\$31,000) amounted to \$1,192.30 per room, or, at 30 pupils per room, \$39.74 per pupil.

In two cases, directly comparable figures were obtained on heating and ventilation plus provisions for future air conditioning, and on complete air conditioning. In the Eunice Smith school in Alton, Ill., the difference in cost was 49 cents per sq. ft., based on an alternate bid for omitting the refrigeration plant. In the Mesa elementary school in Mesa, Ariz., the difference was only 40 cents per sq. ft.

Average Costs

When the averaged costs of the four completely air-conditioned schools included in this analysis are compared with the specific figures above, very

SEVEN SCHOOLS ON WHICH BIDS WERE TAKEN ON HEATING AND VENTILATION PLUS FUTURE AIR CONDITIONING

School	Total Cost	Total Cost Per Sq. Ft.	Heating & Ventilating Cost Per Sq. Ft.	Per Cent of Total Cost
1	\$ 666,000	\$15.49	\$1.32	8.5
2	423,511	9.21	1.29	14.0
11	356,800	10.04	1.55	15.4
12	2,813,000	15.44	1.78	11.5
13	2,745,381	16.54	1.76	10.7
14	1,311,000	10.40	1.55	14.9
15	500,000	15.63	1.72	11.0
Average \$1,259,385		\$13.25	\$1.57	12.3
Average added cost of provisions for future air conditioning 0.19				

similar results are obtained. Thus, the average cost of heating and ventilating equipment in ten schools (see table) was \$1.38 per sq. ft. (ranging from a low of \$1.05 to a high of \$2.09). The average cost of heating and ventilation plus provision for future air conditioning, in seven schools, was \$1.57 per sq. ft., or 19 cents per sq. ft. more. The average cost of complete air conditioning, in four schools, was \$2.12 per sq. ft. or 74 cents more than for basic heating and ventilation, and 55 cents per sq. ft. over the future air-conditioning cost.

The average area of the four schools with complete air conditioning was 33,579 sq. ft. The average number of

classrooms, including in the count lavatories and multipurpose rooms, was 18. Figuring the average additional cost for complete air conditioning of \$0.74 air conditioning cost \$24,848 per building or \$1,384.44 per room and \$46.01 per pupil on a 30-pupil basis. It may be significant that the total heating and air-conditioning costs on these four jobs varied only 15 per cent above and below the average, whereas the total costs varied 41½ per cent. This "sample" is a bit small, but sufficient to show the superiority of per-square-foot figures over percentages of building costs in generalizing as to the cost of school air conditioning.

Operating Expense

While none of the above schools have yet yielded any data on cost of operation, a recent study by the Austin, Tex., Chapter of the American Society of Heating and Air Conditioning Engineers entitled "An Analysis of Air Conditioning for the Austin Public Schools," gives an estimate of this factor, as well as on the cost of adding air conditioning to existing school buildings.

Beginning with a large school building having a low-pressure steam heating system, gravity convectors, forced air convectors and some fan and coil units with ducts, the Chapter committee estimated that conversion of this system to air conditioning unit ventilators would cost about \$2 per sq. ft., or approximately \$147 per student, to install. With respect to this figure, the committee comments, "It is interesting to note, that had the original system been planned for air conditioning, the additional cost for adding the refrigeration

FOUR SCHOOLS ON WHICH BIDS WERE TAKEN ON HEATING AND VENTILATION PLUS COMPLETE AIR CONDITIONING

School	Total Cost	Total Cost Per Sq. Ft.	Heating, Ventilating & Air Conditioning Cost Per Sq. Ft.	Per Cent of Total Cost
1	\$690,000	\$16.04	\$1.88	11.7
11	371,100	10.44	1.95	18.7
16	406,463	14.38	2.41	16.8
17	360,700	13.11	2.22	16.9
Average \$457,066		\$13.49	\$2.12	16.0
Average added cost for complete air conditioning 0.73				

cycle would only have amounted to \$62,000, or 65 cents per sq. ft." In estimating the cost of operation, the committee arrived at the following:

(Concluded on page 68)

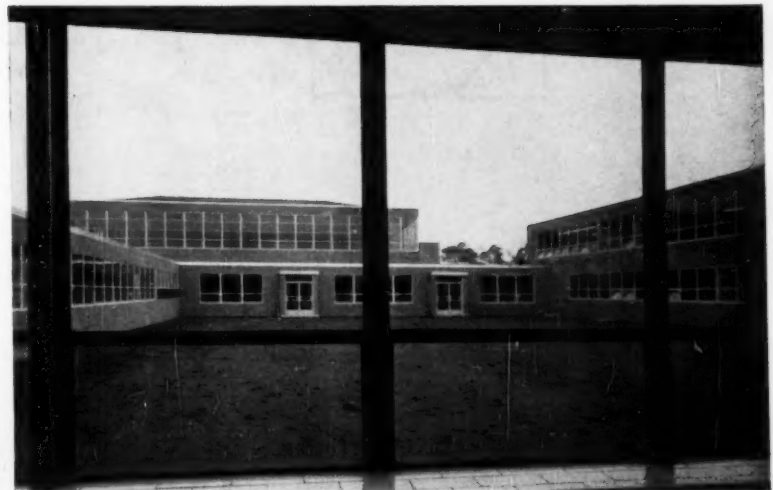


The impressive front exterior and the open court of the West Islip, N. Y., junior-senior high school — Frederic P. Wiedersum Associates, architects-engineers, Valley Stream, N. Y. Dr. Paul Bellew is superintendent at West Islip.

Five years ago the entire school enrollment of West Islip (Long Island), N. Y., was less than 600 and the idea of having their own high school was farthest from the taxpayers' minds.

Since then they have built three new 600-pupil elementary schools, a fourth is scheduled for opening this month and construction started last October, on a fifth. A major addition to the original 300-pupil school is under way to increase the capacity to 390 and provide special facilities equivalent to the newer schools.

But the real pride and joy of the community is the spanking new 1500-pupil high school which opened in September complete with an 860-seat auditorium, twin cafeterias, a gymnasium with folding bleachers for 960, modern industrial arts shops and a 30 by 75 feet swimming pool which is fast becoming



FREDERIC G. WIEDERSUM

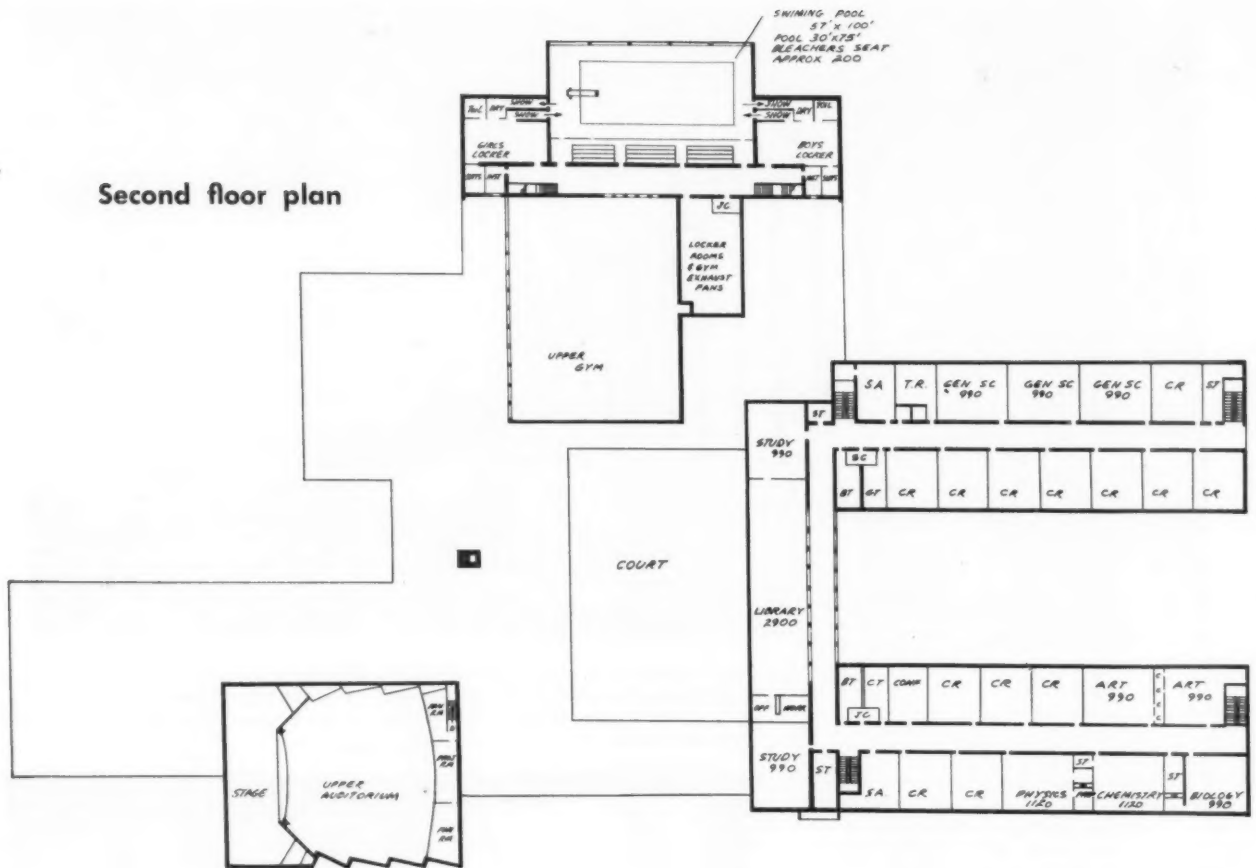
Partner, Frederic P. Wiedersum Associates
Architect-Engineers, Valley Stream, N. Y.

Designed to meet the needs

of a growing community...

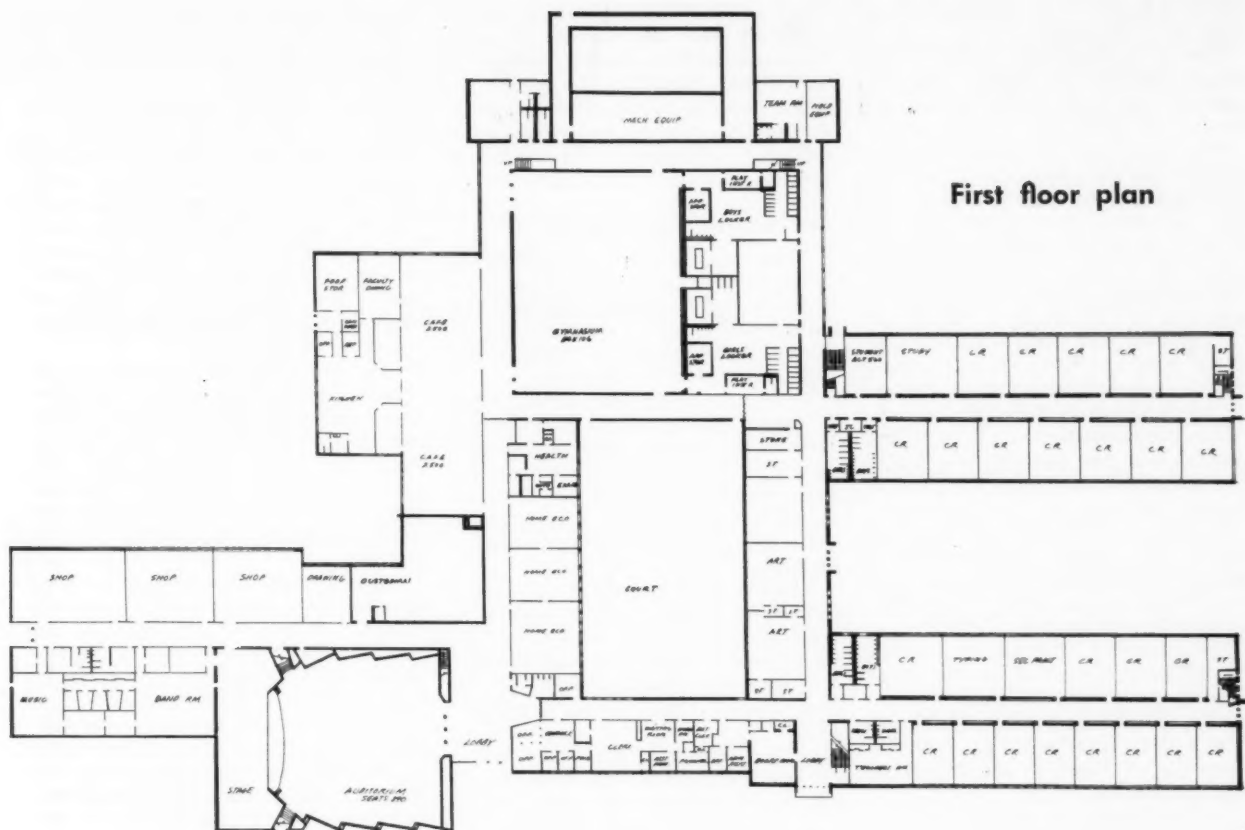
West Islip High School

Second floor plan

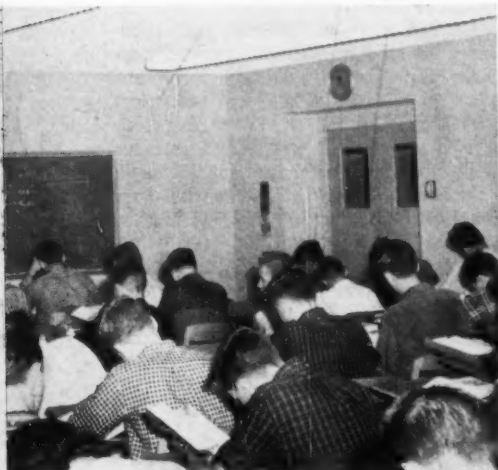


West Islip's large library (left). Several study rooms (below) are included with the classrooms of the





school for between-class study. The home economics rooms (one of the three is at the right) have modern equipment.



the most popular spot in town for kids, teen-agers, and adults.

Even this isn't the end of West Islip's school construction program. One and possibly two junior high schools will have to be started by 1960.

The board of education, presently chairmanned by Livingston S. Jennings, superintendent of schools Paul J. Bellew, and Frederic P. Wiedersum Associates, architects, have been continually busy planning for and meeting the classroom needs of the fast growing district.

Taxpayers have taken a realistic view of the need and backed up the school board's recommendations with approval for bond issues to build the schools. Citizen's committees have worked first to make sure the planning was sound, then going out and selling the propositions to others.

Contractors have been an important part of the "team," co-operating in special work schedules to assure completion of buildings as quickly as possible to meet the need for more classrooms.

The previously little hamlet 45 miles from midtown New York has attracted so many young homeowners that it has quickly outdistanced the established villages of Babylon and Bay Shore, on either side of them, in the matter of school population.

Total population is now over 18,000, and school enrollment is up to 4300. It is expected to go over 6000 by September, 1960.

Design of the Building

The new junior-senior high school was designed to provide adequate separation of junior and senior high school activities during its early operation and to eventually be utilized completely as a senior high school without any loss of efficiency.

Built on a 28-acre site adjacent to one of the elementary schools, the new high school has twin two-story academic wings which presently afford a division between junior and senior high school classes. These contain 39 general classrooms, seven science rooms and laboratories, two art rooms, study hall, and conference room. They are connected by a two-story unit with typing, secretarial practice, and distributive education rooms, a large library and study halls.

The lower part of this unit serves as one side of the central quadrangle surrounding an attractive open court which provides a relaxing outdoor study area in good weather. Corridors passing the administrative offices and the gymnasium and the health offices and home economics and business education rooms combine to surround the courtyard.

The 860-seat auditorium is reached directly from the driveway through a

marble-walled lobby which provides a spotlessly clean appearance with minimum maintenance. Directly behind the auditorium stage are the music and music practice rooms plus storage for musical instruments and stage props. Adjacent to them are the mechanical drawing room and three large shops.

The Industrial-Arts Program

These are set up as "unit" shops, permitting instruction in as many as seven different industrial-arts subjects. This permits the use of better equipment, allows a higher degree of specialization, and insures greater utilization.

It permits the present combination of a general industrial-arts program for junior high students and elective specialization for senior high students. Yet it assures easy transformation at a later date to a single advanced program when the school becomes completely a senior high school.

The industrial-arts program includes metalworking, auto repair, woodworking, ceramics, printing, textiles, electricity, blueprint reading, mechanical drawing, and related information. All the shop equipment and tools are regular industrial type with the exception of printing presses and textile looms, where the intention is to provide basic knowledge rather than advanced machine operation.

The program is intended to provide a broad educational knowledge of various trades in order to better equip the students to meet everyday problems—evaluation of workmanship and materials as a consumer, ability to handle "do-it-yourself" tasks, consideration of a future trade, and training for apprenticeship in a vocation if desired.

Although printing is seldom included in public school shop programs, it was incorporated in the West Islip program because Long Island is one of the most active publishing and printing areas in the country—from such giants as Doubleday and U. S. Printing and Lithograph to literally thousands of small job printers. Knowledge of printing operations is also valuable in the related fields of advertising, merchandising, publicity, etc.

Textiles was also included, partially because there are a great many small textile manufacturers located on Long Island as well as clothing and other textile stores offering broad employment opportunities, but even more due to the fact that textile purchases are a major part of the consumer dollar.

Ceramics is included in the program, both for its value in art appreciation and because of its increasing importance in the field of electronics, which is another major industry on Long Island.

Here, the industrial-arts program is

geared mainly to consumer education affecting all the students, yet affords excellent training to those seeking vocational advancement.

Twin cafeterias, separated by sliding partitions, and a faculty dining room are served by a single large kitchen. The partitions permit separation of junior and senior high school groups, yet allow the area to be opened as a single room for other occasions. It is located adjacent to the gymnasium for ease of traffic flow during periods of public use without interference with academic sections of the building.

The swimming pool, corrective gymnasium, team rooms, lockers and showers, a rifle range, and instructors' offices are adjacent to the gymnasium. This includes an 84 by 106-foot court with sliding partitions to permit multiple physical education classes to operate simultaneously and folding bleachers to seat 960.

Although the swimming pool is one of the first in a public school on Long Island—there are only four in the area outside of New York City, it has already become one of the most highly utilized facilities in the school.

Each of the present 1325 students has one period (50 minutes) per week of instructional swimming during his regular school day. An afterschool intramural program (boys and girls on alternate days) gives the boys development towards competitive swimming and the girls toward both competition and rhythmic swimming. Later in the year there will be competition for the school teams which will compete informally with other schools.

Construction Materials

The new school is of contemporary one- and two-story design with structural steel frame and brick and cinder block walls. Outside trim is limestone, and there are glazed brick panels in the auditorium wall.

Floors are of reinforced concrete. Walls and window panels are self-standing. The roof is poured concrete. Corridor floors are terrazzo and classrooms have asphalt tile. There are acoustical tile ceilings throughout. Tile wainscoting is used in corridors with painted cinder block above and in classroom walls.

Although located in one of the most expensive construction markets in the country, cost of the West Islip High School was held down to a reasonable level. Construction contracts totaled \$3,168,776. This amounted to \$1.17 per cubic foot, \$16.78 per square foot, and \$2,112½ per pupil. Total of the bond issue, which included furniture and equipment, site development, administration, fees and insurance, was \$3,694,417.

Thinking about closed-circuit TV for your schools?

Here are all the facts and figures in—

Equipping the Hagerstown ETV Project

L. L. LEWIS

Educational Administrator

Radio Corporation of America, Camden, N. J.

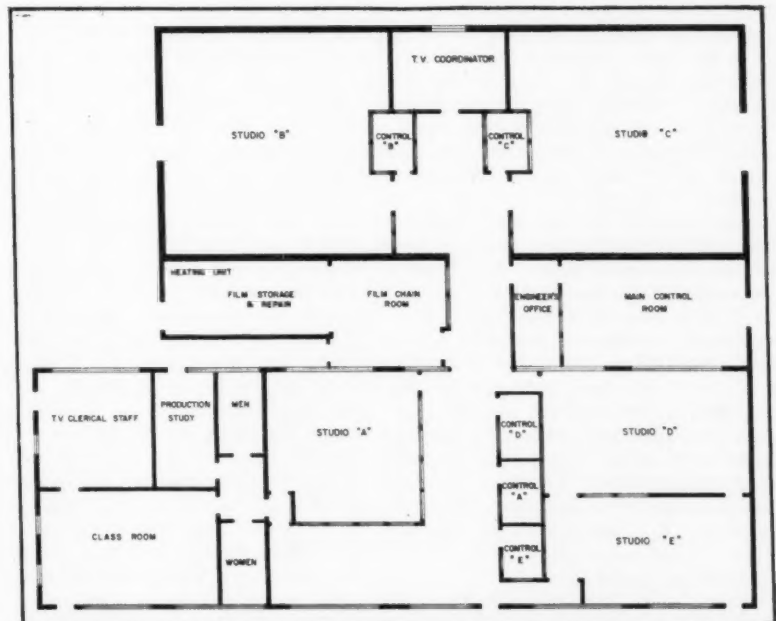
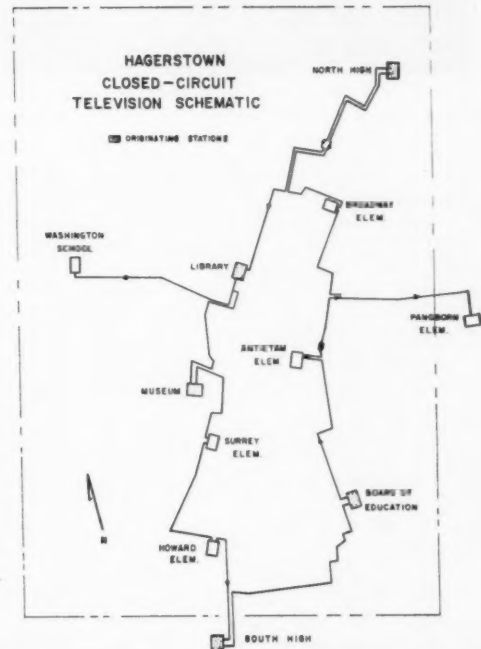
A number of colleges have experimented with instruction by television and reports of authorities in the field of instruction invariably come out with the same answer: That pupil achievement after TV teaching is at least as good as achievement following instruction. This should be encouraging to the educator since many of the uses of TV for instruction are yet to be developed.

A number of colleges have proved that TV can be used successfully and economically in education. However, it is still a question as to how it can be done successfully in the primary and secondary school systems. It is well known that the schools have a teacher shortage at the present time; also that the student enrollment in the grade schools will be 30 per cent greater within nine years, and 50 per cent greater in high schools. We also know that in some areas of the United States, student enrollment will more than double in the same period. Therefore, it is important that the schools become familiar with TV as an instructional tool. This can be a means of spreading teachers' efforts, reducing the teacher load, and improving instruction. It can also mean raising the teacher's economic standards such as has been possible in industry, where new and better time-saving tools are used.

The Background

For these reasons it is believed, by members of the Electronic Industries Association that industry can be of assistance in finding the answers to questions concerning the application of TV in the school system. Members of the School Equipment Committee of the Electronic Industries Association have co-operated with the

Sketch of the schools serviced by the Hagerstown network (right) and the floor plan of the current, enlarged TV teaching center (below). At its inception the project served eight schools from two studios.





One of the studios in the Hagerstown closed-circuit ETV network, illustrating the type of equipment used and the construction materials utilized in the rooms.

Fund for the Advancement of Education regarding plans to establish television in a school system that would use TV in instruction to test its possibilities. The school staff, in turn, would make the experience with TV available to others. It was soon agreed between these two organizations, EIA and FAE, to sponsor a television project, for instruction purposes, in co-operation with a typical school system.

After a number of school systems had been checked as to possible participants, the Washington County, Maryland, school district, with offices at Hagerstown, was selected as the one to conduct this experiment.

For purposes of acquainting the teachers, the Parent-Teacher Association, and other interested civic and community groups with the techniques of teaching by TV, a six-week work-shop was held in the summer of 1956. In fact, one might well note that this workshop is a prime reason why this project has become successful. Teachers quickly found that they could operate TV to put their subjects into a comprehensive instruction plan as had never before been possible. Many advantages began to develop: (1) With the help of the TV camera they could now magnify objects such as page-size pictures, charts, and small models for classroom instruction. (2) They could also use films and slides without moving equipment or darkening or otherwise disrupting a classroom. (3) They could teach a number of classes at one time and use the balance of the day for preparing the next day's classwork. (4) Time saved also meant that more time could be given to improving methods of regular instruction, and to locating slides, films, and other illustrative materials. (5) More time could be devoted to individual work with students who needed special help.

After a few days' use and discussion of the TV medium, this workshop turned

to the consideration of better instruction and the rest of the six weeks' period was devoted to this aspect of the associated problems. How to operate the TV equipment was not a problem, but how to use it at its fullest potential for better instruction was a challenge.

The School Equipment Committee of the EIA had taken on the task of furnishing equipment for this project. Contacts were made with more than 50 electronic manufacturers. Later on, in November, 1956, a task force committee for the Hagerstown TV project was appointed from industry to take over the responsibility for co-ordinating the equipment plans and procurement. Persons were chosen for their experience in both the television and educational fields.

Equipment Plans

Before the plans for this television system could be made, it was necessary to co-ordinate the equipment plans with methods and plans for instruction. For this reason some backgrounds on the instruction planning is given here. After the preliminary plans had been agreed upon by the three organizations involved, detailed equipment plans were begun. A temporary studio was established during the summer months of 1956, so that the staff could begin the television workshop. An experienced television engineer was hired for the project. He started plans for the TV teaching center and television installation. Included in the building plans were three instruction-originating rooms or teaching studios. In the building there were workrooms for the instructors and a control room.

The television teaching center was built in a steel, barrack-type building, at the rear of the school office building. While the studios were being erected, it was necessary to begin class instruction with one temporary studio in one end of the building. For this period the control equip-

ment was housed on a truck, parked adjacent to the studio. The time required for the construction of the TV center and the receipt of the equipment did delay some of the class instruction for several months. It must be remembered that this project was started in a relatively short period of time after being approved. An unusual amount of effort was expended to get the television system into operation within a short time. It is much to be preferred to plan such a project far enough ahead so that a rush to make the installation is not necessary.

During the summer of 1956, the Chesapeake and Potomac Telephone Company installed cables interconnecting the eight schools. Much could be said of the effort expended on the installation of this distribution system, which included over 12.5 miles of coaxial cable, and was completed by the time school started in September.

TV Teaching Studios

By November, two permanent television teaching studios were completed and put into operation. It was then possible to teach at least one subject in each of the 12 grades by means of the TV system. One studio contained three industrial-type vidicon cameras. Since these cameras were not equipped with viewfinders or lens turrets, it took three cameras to accomplish the desired picture changes from one position to another. The second studio was equipped with two professional vidicon cameras with viewfinders. It has been demonstrated that the manually operated camera with a viewfinder gives faster performance.

Later the third studio was equipped with cameras, which could be operated by remote control or manually as desired. Remote control cameras may be advantageous in some types of instruction and experiments will be carried on to check such uses.

TV Teaching Center

Some of the reasons why a teaching center was used instead of moving the cameras from classroom to classroom are given below:

1. It is more efficient and less expensive for maintenance and operation to have the television and associated equipment in one area.
2. The relatively expensive television equipment can be used more efficiently when it is not moved from one place to another. It is easier to move articles of instruction compared to the moving of lights, cameras, cables, and microphones. There is also a saving in treating fewer rooms for improved acoustics and ventilation.
3. Visual materials can be shared with other television classes.
4. Instructors can work together on the exchange of ideas as well as materials.

5. Program switching and terminations are much more efficiently handled for large groups.

6. In the teaching center the teacher does not usually teach with a class present but can carry on the instruction undisturbed and give every TV student the eye-to-eye contact which is so attention-compelling. Students, however, can be brought into the teaching studios if desired.

7. Several television instruction areas in each studio can be made ready ahead of time, with more and better preparation, than in a classroom used by students.

8. Films and slides can be incorporated readily into the live programs with the push of a switch. Short subjects on film or a few slides can now be economically used since there is no time lost with the interruption of installing equipment in one classroom at a time, or darkening rooms which cannot be supervised or ventilated by curtained windows. Students can also take notes during the showing of slides or a film in a television class.

Television Receiver Equipment

The television receivers used were furnished by nine different manufacturers with additional types still being received. It is believed desirable to have at least two receivers in each classroom for several reasons:

1. If one receiver should function improperly the lesson would not be lost.
2. A rule of thumb that maximum distance for acceptable viewing is not over one foot for each inch of picture tube has been adhered to whenever possible.
3. Two television sets for an average classroom will give more equal viewing opportunity for an average class of 30 to 40 students.

Most of these television sets are of the table model type, with 21-in. picture tubes and with speakers on the sides. It is planned that speakers, when mounted on the sides, will be taken out of the cabinets and placed in baffles on top of the sets for improved sound distribution. Stands for the receivers were made of aluminum tubing, with heights of 41 in. and 44 in., depending on the ages of the students in the classroom. At the correct height, the bottom of the television screen is high enough that the students farthest away can see over the heads of those in front.

In the lower grades the teachers adjusted the receivers for best picture quality, while in the higher grades students were appointed to adjust the sets. There was very little trouble with this arrangement after those responsible were given a short period of instruction.

Local servicemen took care of the receivers at an average cost of less than one dollar per receiver for an average of 150 receivers. Some time ago, a projection-

type receiver had undergone experimentation. This is a new model with increased picture brightness. With the additional brightness it is possible to have a few foot-candles of light in the room for supervision and the taking of notes.

Estimated Costs of Equipment

At the end of the first year there were three studios in operation at the television teaching center. An estimate of the cost to equip the teaching center is \$30,000 for the first studio and \$26,000 for each additional studio. It is believed that the quality of the television equipment for instruction purposes should be at least as good as that used in this project. In addition to the three studios at the teaching center there is a film room from which movies and slides are reproduced into the television system. Film equipment includes one film camera, using a vidicon picture tube for films; one film camera, using an iconoscope tube, for slides; one film projector; one multiplexer and one slide projector. An estimated price on this television film system is \$15,500. In regard to the television receivers and distribution systems, 200 receivers were installed in the eight schools. Costs of the receivers and distribution systems in all schools is estimated at \$42,000.

For interconnection of schools, a coaxial cable is used with the capability to carry six television channels complete with both video and sound. Estimates on the costs of coaxial cable installation and rental has not yet been made available by the telephone company. A school system needing estimates on costs for interconnecting schools should request rates from their local telephone company.

All studio equipment in this television project is scheduled for almost continuous service. By using the equipment for many classes at a time and for continuous service for many subjects during a school day, television can justify itself economically. It also has shown encouraging indications of offering new opportunities to improve instruction. High Schools of 1000 students or more could economically justify a television teaching center. Such a plan could be the start of a closed-circuit educational system. Such a system could be started in one high school building and would not have long interconnecting cables. As expansion was warranted, interconnecting coaxial cables could be installed to other high schools or grade schools to receive instruction by closed-circuit television.

The type of television equipment used at Hagerstown has proved to be reliable for instruction purposes. Some refinements were made on a few items during the first year, however there have been no indications of significant changes in the foreseen future.

Expansion Plans

There has been an expansion of this

television system for the school year 1957-58. Two more television TV teaching studios have been constructed at the present TV teaching center. Fifteen more schools are connected with the teaching center by means of coaxial cable, making a total of 23. This closed-circuit television system now includes a total of 12,000 students. For the school year 1958-59, plans for expansion include the interconnection of 25 additional schools for the complete county closed-circuit television system of 48 schools and 18,000 students. These plans call for completion of equipment installation in three years, with a total length of five years for this project.

Present Indications of Results

It should be noted that the television instruction period took up 50 per cent of the class time with the rest of the time taken for questions and answers, discussions, tests, and daily assignments by the room teacher. It is interesting also to know that the high school TV classes were varied in size, from the usual number to classes of over 100 pupils. In a relatively short period of time, this project has shown some interesting results in the progress made when television is used for instruction purposes. For example, the school staff reports the following:

1. Music is brought regularly to the schoolroom by a trained teacher who brings a piano, record player, and other musical instruments with her. It would take 15 more teachers to do this same amount of work, many more pianos, and other musical instruments.

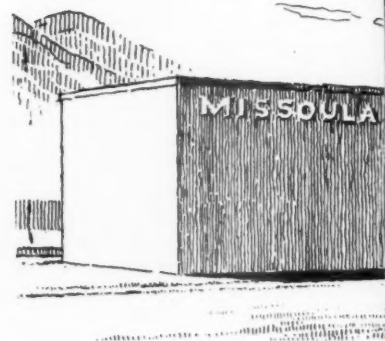
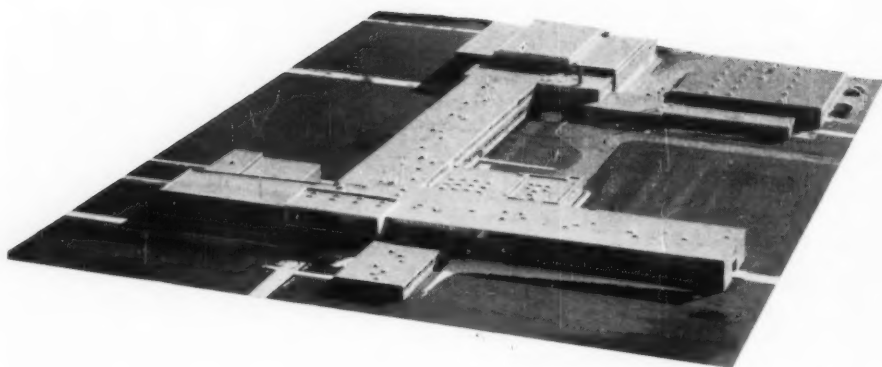
2. Art is another subject which is brought into the classrooms regularly and with better illustrative materials. A noticeable improvement has been made in all art classes taught by television.

3. Although some TV classes are more than double the usual size, the classroom teachers have fewer discipline problems because students pay better attention in the work than they do in direct instruction classes.

4. The TV instruction encourages changes in growth patterns in all ages of students. It is believed desirable to check these results through the period of at least another school year before making a detailed report. From the past year of experience, it is believed that even more encouraging results can be obtained during this second year.

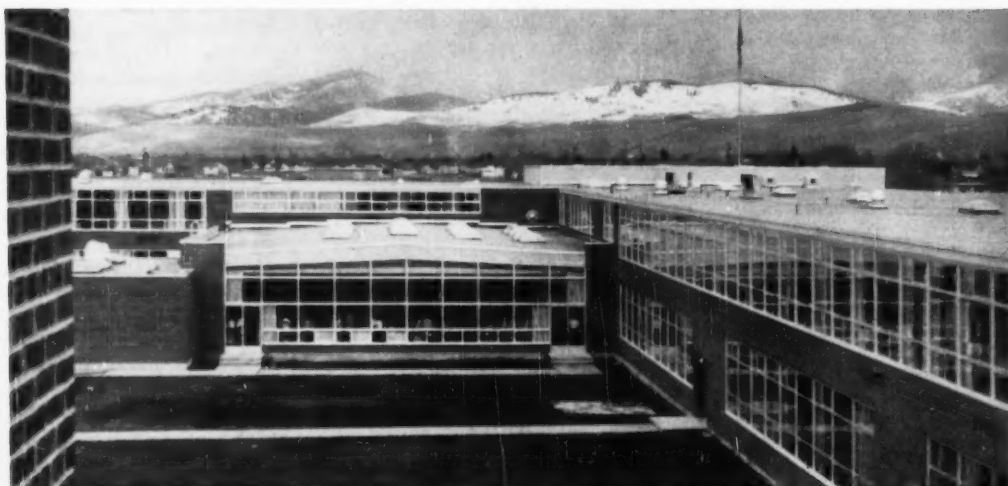
5. In sixth grade science, it was found possible to create more interest for outside reading, and the demand for library science books went up a noticeable extent.

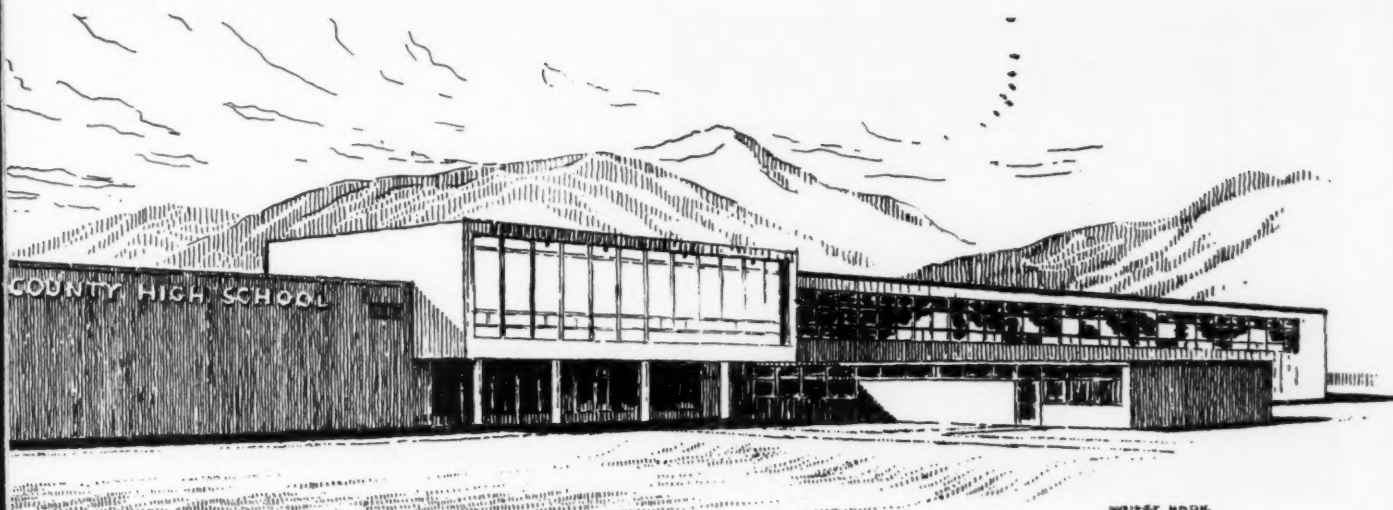
6. Better in-service training of new teachers was accomplished than ever before. Daily observation of the teaching methods of the more experienced teachers helped the new teachers to become adjusted more rapidly.



**Co-operatively
planned and built to
serve 1500 senior
high school students
with remarkably
complete facilities —**

Exterior views of the Missoula County high school, Missoula, Mont. — Brinkman and Lenon, architects, Kalispell, Mont. Above is the main front entrance and below is the entrance to the science department.





The Missoula County High School

D. H. BEARY

Principal, Missoula County High School
Missoula, Mont.

The new Missoula County high school is located in Missoula, Mont., the hub of five great valleys, surrounded by majestic mountains.

The plant was constructed on a 52-acre plot adjoining the 40-acre Little League Baseball fields, a proposed 30-acre recreational park, and the Western Montana Fair Grounds, all of which are a part of the educational, social, and recreational aspect of the school community.

The educational specifications of the school plant were developed jointly by the board of trustees, staff, lay people, and students, working with the architects to improve the instructional program for a growing school and community. These specifications provided for all academic departments, special facilities, student and teacher services, clock and alarm systems, landscaping and other necessary features for a comprehensive high school.



Typical classroom of the 46 in the Missoula County high school. Academic areas have plaster walls, asphalt tile floors, and movable chalk, tack, and peg boards for versatility.



The physics laboratory, one of the science department's four self-contained units, is shown at the left. In an adjoining supply room is a physics panel which can send both direct and alternating currents in various voltages to the laboratory tables. Below is a view of the school's library. A special conference room, a textbook storage and stack room, and an office complete the facilities.



The unit-kitchen room of the school's home-economics department. A living room with fireplace, lavatory facilities, a sewing laboratory, and a multi-purpose room complete the homemaking facilities of the school.

In making recommendations, each department considered an outline developed by the administrative staff which included: point of view, scope of activities, relationship to other areas, basic consideration, general functions, performance standards, storage, special areas, washing and toilet facilities, and equipment. The teachers were encouraged to deviate from the standard outline to achieve the best possible results. Following the printing of the educational specifications the board and its staff members worked directly with the

architects to assist in the development of their ideas. The result was an excellent building at a comparatively low cost.

Facilities Provided

A rundown of the important areas of the school follows:

Classrooms. Ten English, six mathematics, three language, seven social studies, three industrial education, and two physical education classrooms.

Fine Arts. Commercial art laboratory with photographic studio, crafts, and ceramics laboratories, drawing and architectural laboratory, and fine-arts laboratory. Each of the laboratories is equipped with compressed air, exhaust fan, and stainless steel sinks.

Homemaking. Six unit kitchens and demonstration area, living room with fireplace, lavatory facilities, sewing laboratory, multi-purpose room for preschool and upholstering, fitting room, and conference room.

Science Laboratories. Multi-purpose laboratory and classroom, two biology laboratories, chemistry laboratory, physics laboratory, area for planting and plans for greenhouse.

Commercial Education. Distributive education laboratory with special merchandise display window, shorthand-typing laboratory, typing classroom, bookkeeping classroom, cleaning and storage room with compressed air, multi-purpose room, and storage rooms. All classrooms equipped with sinks and compressed air.

Industrial Education. Vocational agricul-

ture shop, machine shop, general shop, lumber storage rooms, student change room, forge and welding rooms, machine and auto painting rooms, project rooms, and storage. Three classrooms designed especially for this department.

Music Laboratory. Four teacher-stations and ten practice rooms adjacent to the Little Theatre.

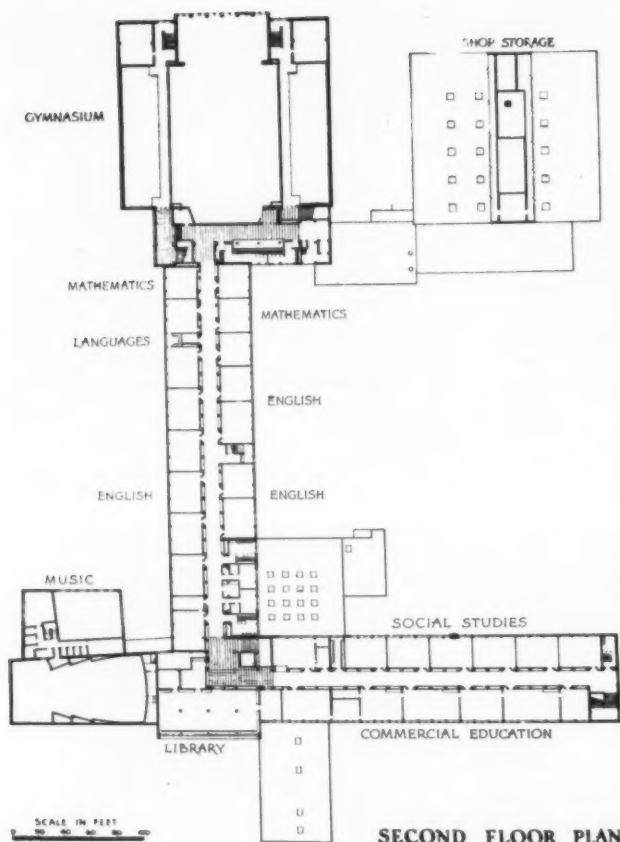
Gymnasium. Seven teacher-stations with large stage, three drying rooms, three offices, one training room, three large shower rooms, four storage rooms, one laundry, one band shell, two classrooms, two snack bars located in large lobbies off the main gymnasium area.

Lunchroom and Study Hall Area. Large dining area, 400 seats; two small dining areas, 200 seats; kitchen; dry, sharp, and

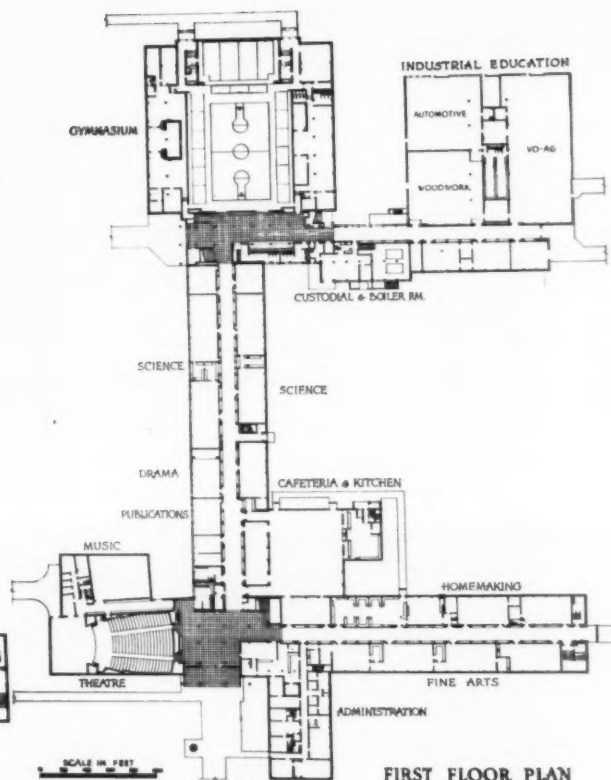


Interesting rooms of the industrial-arts department of the Missoula County, Mont., senior high school include an industrial education double-classroom (above) and the woodworking shop. The industrial-arts department at the school includes instruction in vocational agriculture, machine shop, general shop, forge. There are welding rooms, machine and auto painting rooms, project rooms, storage rooms, and offices. There are also three classrooms designed specially for the industrial-education department.





SECOND FLOOR PLAN



FIRST FLOOR PLAN

cold storage rooms; office; dish and pan washing areas and garbage room.

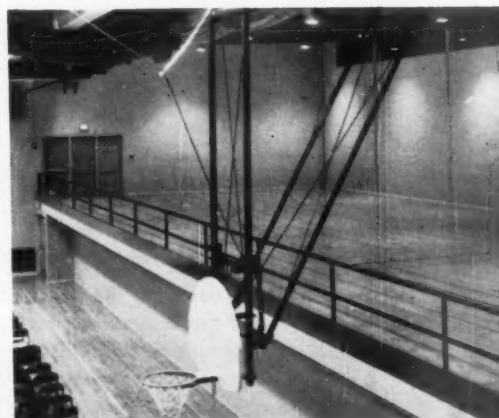
Administrative Suite. Patron receiving, student and teacher receiving, vice-principal's office, intercommunication room (including closed circuit TV), two guidance offices with four conference rooms, teachers' lounge and work room, health department (including boys' and girls' emergency rooms, receiving office, audiometer room, storage, and lavatories), two vaults, principal's office, and board room.

Custodial Areas. Receiving areas, boiler room (two low-pressure) boilers gas-fired; ample storage, office, change room (lockers and shower); elevator; incinerator (out and inside service); janitorial service areas throughout the entire building with water and compressed air; transformer vault and meter room.

The reinforced concrete structure with brick exterior contains 197,000 square feet of floor space, not including basement storage in the custodial area and administrative suite.

The total contract price of \$2,067,410.82 or \$10.49 per square foot, as compared to \$13.59 Montana average for all elementary and high school buildings constructed last year, is not only low for our state but for the nation as well.

The gymnasium-auditorium seats 1600 on the main floor, which is illustrated below. At the right is one of the two adjacent balconies which can be used as a teaching station or as a spectator area. Three folding curtains separate the gymnasium for simultaneous use by boys and girls.



Expediting Maintenance Through School Design

JOHN HUNTER, JR.

Hunter, Campbell, and Rea, Architects, Altoona, Pa.

Any architectural office that has observed the tide of change in school design continues to be challenged by the basic elements of building operation and maintenance. These elements are efficiency and economy. When these terms are emphasized as they usually are in discussions, and of late more frequently in practice, the architect attaches real meaning to their importance.

In order to clarify the area to be considered here, let it be suggested that to architects, buildings already constructed and in use are past the point of design and redesign, except where it is determined to make major alterations that would affect operation and maintenance.

When it has been determined that a school building program shall go forward, innumerable conferences should be held by the architect with the school administrator and members of his professional staff. Sometimes there are special committees that include lay people. There continue to be instances where the architect is steered away from school plant managers, chief custodians, and the rank and file operating personnel. A building program in its early stages of planning, if it is to be consummated in a real functional school plant, requires the inclusion of the co-operative participation of plant managers, operation specialists, chief custodians, chief matrons, and those who perform the daily assignments in housekeeping and repair. My own experience has been that any of these personnel who analyze their service assignments intelligently can contribute much to early planning that can be translated to improved building design. But they must be given an opportunity to contribute out of their job experiences and their imagination. Their contributions invariably usually contain ideas of real merit.

Architects can obtain much practical information of real value from experienced building managers and custodians who are charged with keeping buildings in good service order. The architectural office, however, still has the undeniable responsibility of conducting research constantly, so that

it may be aware of new and improved ideas in general design, new and tested materials that may be used, new methods of building operation, and new devices and operation equipment available.

Now to say that the inclusion or omission of a particular feature, service item, or mechanical device is either good or bad must be determined by reconciling all the desires of the co-operative planners. Sometimes the architect must be the arbiter at that point. His experience and expert professional knowledge should be channeled, through fairness to all, so that efficiency and economy may govern the design produced finally. Of course, the school board gives the final approval just as in the case where an architect designs a residence for an individual.

Two Goals

School buildings, in the final consideration, are built for two purposes: (1) to house children of school-going age; and (2) to provide facilities for them in the operation of a program of education. The buildings must be safe, properly heated and ventilated, sanitary, time and energy saving, contain an environment that is conducive to good health and comfort, easy to operate and maintain, and finally economical in budgetary cost, yet efficient in pupil services.

What can school plant design contribute to efficient and economical operation and maintenance? By school plant, let us consider the inclusion of the building itself with all of its operational services, and also, the entire acreage or space constituting the outside area.

The general prevailing economy of today in most communities compels simple design free from elaborate lines of the past and expensive materials of the present. Present design in view of increasing school populations must provide for building future additions in many instances. Where an addition is anticipated in several years, it is essential that provision be made for further construction, however, so that the least amount of the original structure is

destroyed, as for instance, in adding a wing of classrooms, a gymnasium, an auditorium, shops, or food facilities. There is considerable risk in future economy when the present design completes or closes a building. Again, in the instance of heating, there should be ample space to accommodate the installation of more heat units in the boiler room and service lines should be of such size and should be extended so that new lines to serve a building addition can be connected immediately within the original building. The same holds for water, electric, and sanitary lines. The access to main service lines suggests rather emphatically and obviously that they be installed under the first floor and in sufficient crawl space so they can be reached easily, and repairs and replacements made within a reasonable time and at a reasonable cost. A crawl space of several feet high under the major portion of a building usually contributes to better operation, less maintenance cost, and longer life of the building.

Furthermore, where service lines are embedded in a slab-on-the-ground type of construction, there invariably follows almost constant operational and maintenance problems. This is especially true in latitudes where there are extreme changes in temperature and weather.

Immediate and Future Costs

The application of true economy is sometimes difficult. As happens frequently, there may be a choice between current high cost and long-term low cost, and current low cost and long-term high cost. Generally, long-term low cost, which may mean current high cost, is the more economical. Good examples are found in comparisons of rough and smooth finish plaster walls, or plaster and tile walls, or acoustical and plaster ceilings. For all practical purposes in most new buildings and considering custodial services and maintenance, it appears that acoustical tile ceilings, smooth plastered side walls in classrooms, corridors, and other service centers are very satisfactory. Also, the use of tile for corridor

wainscot, toilet room side walls, shower room side walls and kitchen side walls. Auditorium and auditor ceilings and side walls may be treated acoustically by plaster, tile, or other special material. Sometimes there is hesitancy to approve the installation of acoustical tile on gymnasium ceilings. Our experience supports such installation because of sound control, low-cost operation and maintenance, and more desirable appearance. With proper attention to design and selection of color, it is also possible to avoid institutional appearance.

Another instance of comparison is found in floor materials. High grade wood floors are continuing to be best for gymnasium floors because of the nature of floor use. Floor treatment must consider the floor itself and also its use. A penetrating wood treatment that improves the wearing quality and appearance requires less maintenance than a surface coating; and such treated floor cleans more readily and in less time. Most classrooms and other service centers are floored with tile of some kind. The problem of floor material for corridors, toilet rooms, shower rooms, and kitchen frequently cause some special consideration. Ease of cleaning, appearance, life, and cost enter into choices. Terrazzo corridor and toilet room floors are easily cleaned and last a long time, yet cost more initially than most other type floors; they are another long-term low-cost item. A choice of flooring in shower rooms would be from among concrete, terrazzo, and ceramic tile. A good serviceable kitchen floor might be quarry tile or greaseproof plastic tile. It may be noted here that the field of plastics may produce more valuable items for school buildings in the future.

Still another comparison to fit this subject is found in the general hardware to be used. Suffice it to say that only high-grade and reputable hardware—locks, hinges, panic bolts, etc.—will be satisfactory. Low grade hardware, competitive for only sale purposes, rarely operates satisfactorily and always presents a very annoying maintenance problem.

All building and service parts and of whatever material that function only by moving—locks, latches, hinges, switches, valves, hoists, and the like—are most serviceable and last longer when carefully chosen from among high quality products, even though they are among higher initial cost items.

Good Building Design

Good building design provides for building service deliveries and loading, which should then also include storage spaces close to the receiving point to eliminate the necessity to move freight and goods long distances within the building. Adequate storage space in a school building is probably the second most important space area to be given design attention. Distributed storage spaces are essential to instruction, administration, health services, custodial services, food services, and management services. Special storage should be designated and provided for large equipment, such as trucks, power mowers, cultivators, and tools used in grounds care.

The design of a complete school plant includes landscape architectural services

for the design of the school campus, play fields, athletic fields, walkways, driveways, and parking areas. The problems of grading, planting, drainage, and area articulation are of great importance to area function and maintenance.

The location and design of a septic sewage disposal system where no public service system is available must be considered in the comprehensive design of a school plant.

Comprehensive design provides spaced electric service outlets for use in operating mechanical equipment, tempered water taps in closets that also contain sinks for disposal of waste water and cleaning of equipment, and custodial and sanitary supply storage space in the same closet. The closet space should be large enough to store ordinary custodial mechanical equipment. Since it may be anticipated that more such equipment and cleaning tools will be stored in the future, this storage space should be of adequate size. The size of the building should determine the number of such closets needed on each floor.

Each building needs a repair room or shop of ample size where custodial and maintenance employees are provided with workbenches and a variety of tools and probably with a stock of repair and replacement parts for prompt use as needs arise. The building design should place a building care office adjacent to the shop where there is space for a desk, several chairs, shelves, and locker. Every chief custodian of a building has need for such space, but few have had the need satisfied.

A really modern design reduces the amount of exterior surface that requires cleaning and painting, which can be done by using brick, tile, glass, and metal. There is very little need for exterior wood. Window frames and sash, doors, and cornices should be noncorrosive metal. From a custodial aspect, the amount of glass externally and internally presents a problem. This can be offset in part by the control of dust, smoke, and soot through air filters and stack controls. Glass cleaning equipment has advanced rapidly and is reducing the drudgery and time in keeping it clean and functional.

As already noted, floors, wall, and ceiling installation materials determine the ease with which these surfaces can be kept clean and presentable. A very important design item in this consideration is the design of the coved wall base at floor so that cleaning, whether done manually or mechanically, can be done efficiently. Other similar detail considerations in design contribute to operation and maintenance economics.

The management and operation of a building influence the effective operation of the educational program. To design a building for maximum service, it becomes essential that the physical layout of the school plant, the kind and quality of structural materials in it, and the physical plant service appointments are thoughtfully coordinated so that time and labor in operation may be kept to a reasonable minimum, and maintenance problems may be infrequent and then only of a minor nature as might be anticipated in normal wear.

Building operation is always confronted

with the service a building is intended to provide, and the condition and quality of the building as it offers its services. In contemplated building, those who are commissioned to design structures must therefore be aware of building use functions and durability of equipment and materials. The awareness must be manifest in time and labor factors in housekeeping, and labor and material factors in maintenance.

Design Problems

The designer doesn't find his assignment easy when he is fully aware of the size of the building needed, service centers to be contained in the building, quality of site on which the building is to be located, atmospheric and environmental conditions in the area, and also, the amount of money available for the project presently, and the future resources required to operate and maintain the building. The designer is confronted with such problems as to whether it should best be a single story, two story, multi-story, or split-level structure, stair wells or expansive roof; crawl space, pipe trenches, or slab-on-ground; unilateral, clerestory, or dome natural lighting; kind of heating fuel and equipment to use it efficiently; and public connected or self-provided water and sanitary services. It is pertinent to say that each situation presents its own distinct problems and requires its own solutions.

A beautiful, artistic design is not necessarily a good one from a maintenance, and perhaps functional, point of view. For instance, the campus-type school plant in the northern belt of the temperate zone appears to be generally impractical for a number of sound reasons. The initial cost of this design on any unit basis is higher; more acreage is required for a complete school plant site; where considerable site preparation is required, it too costs more initially and later; the plant services by being more extensive are also less economical in operation and maintenance. The campus-type plan is best suited to mild-weather areas where the rigors of low temperatures, frost, and ice are absent. The real basic advantages of the campus-type plan can be incorporated in a carefully developed single building design where efficiency is greater and economy is evident.

These problems are generally solved best by keeping in mind the primary purpose for building the school; then determining the most desirable characteristics and qualities that may be included within the cost limitations; and the reconciliation of present cost with future operation and maintenance costs.

Finally, let me suggest that the design of a school building determines largely the ease of building operation, and the time, labor, and operational materials required for satisfactory operation. The same may be said for maintenance. However, the quality of the building, along with its cost, determines the amount of freedom the designer is given. Ideas and suggestions by co-operative planners are needed to encourage progress in design, and architects must share in research extensively. The economy of time, energy, and cost are factors governing design.

Election Ballot Propositions for School Construction

STEPHEN F. ROACH

Editor, *Eastern School Law Review*, Jersey City, N. J.

The point need not be labored that the task of furnishing adequate schoolhouse facilities constitutes one of the major problems in present-day school board operations.

Where, in its efforts to solve such problems, a district school board must consider the use of bond issues to finance both the construction of new facilities and the remodeling of existing ones, some important legal issues may arise.

An interesting case¹ involving this aspect of board operations was recently decided in the Supreme Court of Minnesota.

Facts of the Case

On February 7, 1956, pursuant to a resolution previously adopted by the school board, the voters of Joint Independent Consolidated School District No. 11 of Big Stone and Traverse Counties approved (by a vote of 306 to 268) the question: "Shall [the district] borrow money by issuing its negotiable coupon general obligation bonds in an amount not to exceed \$450,000 for the purpose of the acquisition and betterment of schoolhouses of the district?"

Thereupon Buhl, and other resident taxpayers and voters, sought to set the February 7 election aside and to prevent the district, the school board, and the superintendent, from issuing or selling bonds under the authority of that election. Buhl contended, among other things, that, in fact, a double proposition had been submitted in the question since it had provided for the acquisition and betterment of schoolhouses.

In the lower court, judgment was entered setting aside the election and enjoining and restraining the defendants—i.e., the district, the board, etc.—from

issuing or selling any bonds purportedly authorized by the election in controversy. This judgment was now being appealed.

The Issues

The parties in litigation had agreed that the only issue involved on this appeal was whether the question as submitted to the voters complied with the law, particularly with the mandate of the existing Minnesota statutes, which provided in part:

"... Each proposition or question submitted shall be stated separately . . . on the ballots."

Since similar statutory provisions exist in the school codes of other states, the views of the court on this aspect of school board operations will also be of value in jurisdictions other than Minnesota.

Findings of the Court

In its opinion the present court first pointed out that in practically all the cases considering similar questions the courts had recognized the basic legal principle that a separate proposition must be placed on the ballot for each distinct and independent object or purpose for which indebtedness was contemplated. "This rule is recognized," it added, "even without an express constitutional or legislative mandate. . . ."

The reason for this principle, the opinion noted, was because the submission of double propositions at elections "may easily be used for logrolling purposes and [to] deprive the voter of his liberty of choice," by, in fact, compelling the voters to accept an undesirable improvement in order to procure a desirable one.

The court then commented further that a second basic principle—related to the first—held that "in order to constitute a single proposition or question, there must exist a natural relationship between the objects covered by the ballot so that they form but one rounded whole or single plan."

"In these days of rapid consolidation and reorganization of . . . school districts . . . it frequently becomes necessary to build new schoolhouses and rehabilitate or remodel existing facilities so as to conform to a new use for a larger enrollment, all as part of a united and integrated plan which will enable the school district to handle the new school population. As long as the ballot includes one related and integrated plan, it states only one proposition or question, even though it might include acquisition of new units and betterment or remodeling of old units."

To constitute the prohibited "duplication of subject matter," an election proposition "must embrace two or more dissimilar and discordant subjects which cannot reasonably be said to have any legitimate connection."

In the particular situation here in litigation, the opinion went on, "the voters knew that they were voting funds to acquire new facilities and better the old ones. The school board had no discretion after the election. . . . [It] is safe to assume that the voters were well informed as to what was contemplated before the election was held. After the election the school board was charged with the duty of using the money for the purpose for which it was voted, that is, both acquiring new school buildings and improving the old ones, all as one integrated and related plan of school improvement. Under these circumstances, it seems clear . . . that the purpose stated [on the ballot] involved only one proposition."

Therewith, the present court set aside the earlier judgment, and upheld the action of the school board.

Significance of the Case

The following significant principles of law were applied by the court in this case.

First: On election questions relating to the incurring of school district indebtedness, separate ballot propositions are to appear for each distinct and independent object or purpose for which indebtedness is contemplated.

Second: Where an election ballot question covers more than one object or purpose, such question will constitute a single proposition when there exists a natural relationship between the objects covered by the question so that they form a single, rounded whole or plan.

Third: Even though an election ballot question may include acquisition of new school district facilities and the betterment or remodeling of old ones, the ballot will be presumed to state only a single proposition as long as the question pertains to a single related, integrated plan for school improvement.

Fourth: An election proposition embracing questions relating to two or more dissimilar and discordant subjects, which cannot reasonably be said to have any legitimate connection, will not be permitted.

Fifth: Where it can be demonstrated that the district voters were well informed (before the election proposition was voted) as to what was contemplated in the line of improving the district's school facilities—viz., the acquiring of new facilities and the betterment of old ones, as the part of a single, integrated, and related plan—and where the question as proposed allows the school board no discretion in the use of funds thus voted, the purposes thus stated in the question involve but a single proposition, and are permissible.

¹Buhl et al. v. Joint Independent Consolidated School Dist. No. 11 of Big Stone and Traverse Counties et al.; cited as 82 N.W. 2d 836 (Minn.) (1957) in the West National Reporter System.

THE AMERICAN School Board Journal

An Independent Periodical of School Administration
William C. Bruce, Editor

SCHOOL BUILDING FINANCE IN 1958

The school building situation in the United States is continuing to be serious and confusing. As in January 1957, the numbers of children registered for the first time is the greatest in the history of the schools, and the growth of junior and senior high schools indicates that there will continue to be serious shortages of classroom facilities in the upper six grades of the schools. It is estimated that there still is a shortage of more than 60,000 classrooms and that there will be the greatest difficulty in overcoming this shortage.

What makes the problem of schoolhouse building so difficult in the coming months is the confused situation in the school bond market. The cost of money for school bonds ranges from 3.30 per cent to nearly 5 per cent, and it is likely that the price of bonds will not rise during the next five or six months to lower this excessive cost of school construction money. The voting of school bonds has been made considerably more difficult for local school boards because of two unfortunate articles in popular magazines, which appeared last fall. As is usually the case, the answers to these articles have been given relatively little publicity. It is a fact which has not been questioned, that in practically all communities, except a few lush suburban towns, the cost of schools has been less in proportion than in other types of public buildings or dwelling houses.

There is every reason for boards of education to push their programs of school plant construction. More than ever, it will be necessary to study their proposed building plans from the standpoint of ultimate economy and instructional efficiency. More than ever, it will be necessary for the strong co-operation of school boards, school executives, and school architects to provide economical buildings which are fully suited to the present educational program and which are at the same time responsive to possible changes in curriculum, teaching method, and organization.

As we said a year ago, the leadership must not listen too closely to the idealistic demands of men who are removed several steps from the responsibility held by the school boards and their professional executives. It should be added frankly, that the continued activity of school boards in promoting needed school building programs will be a valuable help in overcoming the effects of lowered business activity in our general national economy. — W. C. B.

THESE ARE PROBLEMS FOR SCHOOL BOARDS AND ADMINISTRATORS

A TEACHER who teaches in what he calls a "tough school" in New York City and finds satisfaction in his job after 23 years of teaching, says that a teacher who taught there in the early 1900's never found the type of students he describes. He points out that in the old days only 14,000 of the 500,000 children in the elementary schools ever reached high school. Today, everybody up to 16 or 17 goes

because the compulsory education laws say they must.

Without giving his individual examples his general description is worth quoting—a condition we who taught in New York City high schools never met or tolerated in the early 1900's.

"There is admittedly a hard core of boys—perhaps two per cent—who respond to neither reason, nor warmth, nor decency, however abundantly offered. They wander through the school shooting craps wherever they please, selling dirty postcards, drawing scenes on lavatory walls that would make a Kraft-Ebing blush. I have heard drunkards and drug addicts vilifying teachers. It takes only one boy to wreck a lesson by sitting in class and inviting his colleagues: 'Come on to my house, see my gun collection, take one—get the teacher.' A dozen such boys can carry on a guerrilla war that will demoralize an entire student body and faculty." — Charles G. Spiegler, "A Teacher's Report on a Tough School," *The New York Times Magazine*, November 24, 1957, p. 25.

This presumably is the reality behind the Blackboard Jungle. Our teaching becomes a great burden, in which teachers nevertheless find joy in being able to lift up, or reveal to young people their potentialities for good. In our day in New York such cases were highly exceptional.

In the news section of the same paper is a report on the city's special schools, by a committee which studied the problem for a year and a half. New York City takes care of the upset pupils in special classes in neighborhood schools and more especially and effectively in special schools organized for the purpose. School systems, public and private, would profit by a study of these schools.

In the 1900's special classes were instituted in the neighborhood schools to take care of the less maladjusted children in schools due to language, absence, illness, truancy, recent immigration, home difficulties. Experience in Public School 147, where I taught, was quite successful with an interested teacher and a small class. But such classes which still have their uses, are not equal to the greater problems today. The Committee reported:

"It has sometimes been suggested that the needs of these pupils might better be met by setting up special classes for them in neighborhood schools. This has been done in many schools but does not fully solve the problem because it does not remove these aggressive and potentially dangerous pupils with contacts with the less aggressive normal pupils."

But the newer problems are indicated by the Committee:

"These pupils are aggressive, rebellious, and emotionally disturbed. They have shown themselves to be unable to function in a normal school situation, where to a large extent a permissive atmosphere exists. The public school lacks the facilities, the program, and the personnel to meet the individual and highly specialized needs of this group of pupils adequately."

The report noted that the entire educational program of a school could be jeopardized by these youngsters.

This description of conditions shows how completely conditions have changed in the past half century. In the older days, the classroom teacher was in most cases equal to all the cases that arose. By virtue of personality as well as technique, she or he (they were mostly he's) was master of the situation. Today, there is need for greater psychological, psychiatric, and counseling services, both in the central office as well as in the individual school. A large share of the population and the professional services must be dedicated to the new generation. In this lies one of the major problems of universal education devoting so much social energy to not-too-promising human talent, without providing greater opportunity for self-directed gifted youth.

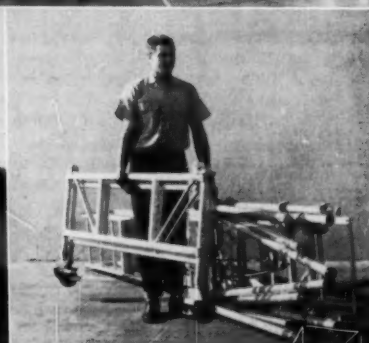
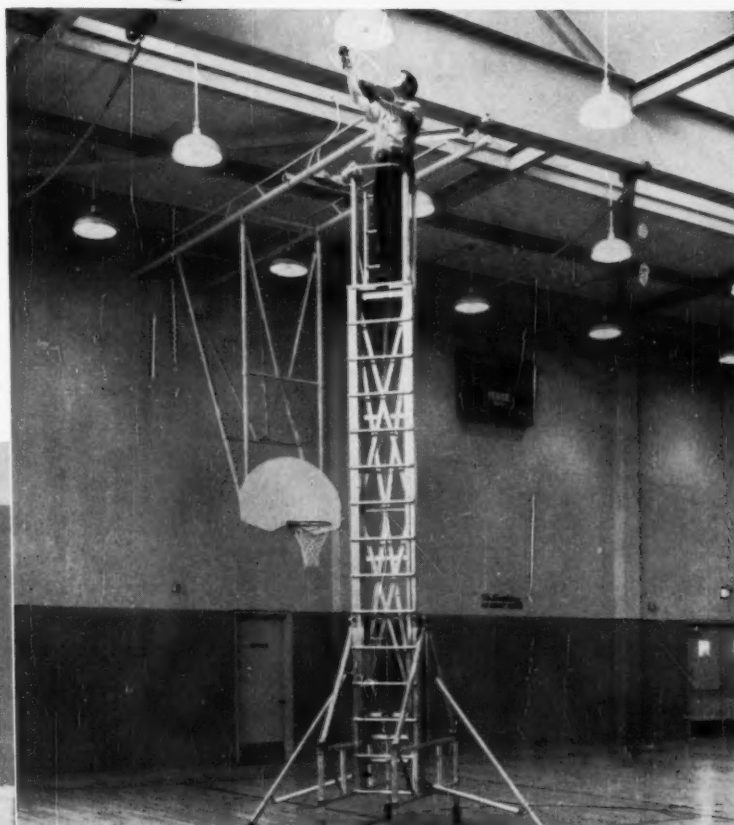
—Edward A. Fitzpatrick

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Directions in School Food Facilities

RUSSELL E. HARDING

Albert Lea, Minn.

An analysis of the direction food service provisions have taken in the public schools since 1940 is made in this study of the school lunch facilities reported in typical elementary schools, described and illustrated in 1939-48 and 1954-55 issues of the *School Board Journal*. To highlight further the expanded role of the modern school lunchroom that the study reveals, the author contrasts recent provisions in food serving functions, multi-purpose rooms, teachers' lunchrooms, storage space, etc., found in today's schools with a study of such facilities found by Dr. Leonard Koos in schools of 1908-17 vintage.

The school lunch has become an important part of the educational program during recent years. The fact stands out quite clearly when comparing Koos's findings¹ with the present study of typical elementary schools reported in the *SCHOOL BOARD JOURNAL* for the periods of 1939-48 and 1954-55.

These findings are summarized in Table I on provisions for food preparation and serving. Many varieties of provisions have been developed which seem to fit the suggestion made by the National Council on Schoolhouse Construction that functional facilities be planned in terms of local needs, and for an accepted lunch program for these facilities.

The Council² listed four types of lunch facilities. These were: complete preparation, service, and dining facilities planned for table service; complete preparation service, and dining area planned for cafeteria service; kitchenette type of food preparation, but dining provided for in the classrooms, assembly room, gymnasium, or other area which is used during the major portion of the day for other purposes; and central food preparation for several school lunch departments in school systems with facilities for serving and dining in each school. Under basic considerations the Council states that "School lunch departments should be planned so as to provide for the natural flow of raw

and prepared materials with a minimum crossing of paths and confusion. The following processes are involved: receiving and storing food, preliminary preparation, preparation service, dining, managing. Provision must be made for maintaining sanitary conditions, and for the comfort and convenience of employees."³

There was a great variety in the ways schools provided facilities. The lunchroom, a place to eat the lunch brought from home, occurred in 6.4 per cent of the schools in Koos's study. This was evenly divided between boys' and girls' lunchrooms. The 1939-48 study showed that 8.9 per cent of the schools had lunchrooms, and the 1954-55 study had only one school so equipped. The dining room was found in 9.5 per cent of Koos's schools, but did not occur in the latter studies. Completely equipped cafeterias were found in 19.4 per cent of the schools in the 1939-48 study, and in 32.1 per cent of the 1954-55 study. Cafeteria service was provided in 38.8 per cent of the 1939-48 schools, and in 50 per cent of the 1954-55 schools.

A Variety of Provisions

In addition to the complete cafeteria facilities, cafeteria service was provided in 4.4 per cent of the schools of the 1939-48 study in connection with multiple-purpose rooms, and in 60.7 per cent in the 1954-55 study. In the 1954-55 study, a greater variety of provisions was found. The study indicated that 32.1 per cent were served in the complete cafeteria, 7.1

per cent in an auditorium-café, 10.7 per cent in the auditorium-gymnasium-cafeteria combination, 3.6 per cent in the lunchroom, and 60.7 per cent in the multiple-use and physical education combination. Some schools indicated two or more provisions for serving lunch. Some of these were for small or adult groups. Kitchens for meetings were found in 14.9 per cent of the schools in the 1939-55 study, and in 50 per cent of the schools in the 1954-55 study.

Three and two-tenths per cent of Koos's study had a teachers' lunchroom, while 13.4 per cent were indicated in the 1939-48 study, and 7.1 per cent in the 1954-55 study. Provisions were planned for each community and varied accordingly, but all had combinations that seemed to meet the Council's recommendations quite well. Showers and dressing rooms for cafeteria workers were lacking in most of the schools. Storage and arrangement of facilities were well planned. Provisions for heating and ventilation were zoned and were met in a number of different ways which were reported as very adequate. Cafeteria equipment was often stressed in the latter studies as being the most modern and complete. Folding tables and chairs were standard equipment. Many used the kind that could be folded into the walls of the cafeteria or cafeteria-combination. The ease of maintenance was stressed. These provisions would compare well with the Council's recommendations.

Three of the primary schools in the 1954-55 study were located in the communities where children could go home for lunch. These schools would tend to lower the percentage of schools providing lunch facilities. However, the trend toward providing primary schools in areas having large numbers of small children is part of the picture in the latter study of 1954-55, and may continue.

Storage Provisions

Storage provisions have been increasing in every school, not only within the space provision such as classroom, gymnasium, and special purpose rooms, but also in the number of rooms designated as storage rooms. The Koos study reported 50.8 per cent of the schools had storage rooms, which increased to 71.6 per cent in 1939-48, and to 82.1 per cent in 1954-55.

TABLE I. Comparison of Number, Percentage, and Kinds of Provisions for Food Preparation and Serving as Found in Three Studies

Kinds of Provisions for Preparation and Serving of Food	Koos' Study 1919		1939-48		Per Cent		1954-55		Per Cent	
Cafeteria			13	19.4	6	21.4				
Aud.-Café					2	7.1				
Aud.-Gym.-Café					3	10.7				
Multi-use Gym.-Café			3	4.4	17	60.7				
Teachers' Lunchroom	3.2		9	13.4	2	7.1				
Lunchroom	6.4		6	8.9	1	3.6				
Dining Room		9.5								
Cafeteria Service			26	38.8	14	50.0				
Complete Café-Service			13	19.4	9	32.1				
Kitchens for Meetings			10	14.9	14	50.0				

¹Koos, Leonard, "Space Provisions in Floor Plans of Modern Elementary School Buildings," *The Elementary School Journal*, 20:12-25, September, 1919.

²National Council on Schoolhouse Construction, *Guide for Planning School Plants*, George Peabody College for Teachers, 1953, p. 6.

³National Council on Schoolhouse Construction, Nashville, Tenn., op. cit., p. 103.



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PERSONAL NEWS

CALIFORNIA

Hillas Cole, president of the Hemet school board, has been elected president of the California School Board Association. He served as first vice-president of the California Association during the past year.

Jack Pyle is the new purchasing agent at Montebello.

William G. Howe is the new purchasing agent for the board of education, Modesto, Calif.

ILLINOIS

Herbert N. Wicks is the new superintendent at Earlville, succeeding L. T. Hanson.

Dr. Aldan F. O'Hearn is director of purchases for the Chicago board of education.

IOWA

H. C. Roberts, secretary and business manager of the Sioux City, Iowa, board of education for the last 39 years, will retire at the end of the current fiscal year, June 30, 1958. Mr. Roberts, a frequent contributor to the SCHOOL BOARD JOURNAL, served as president of the Association of School Business Officials in 1939.

MICHIGAN

Herman J. Dunsenith is the new superintendent at Monroe.

MISSISSIPPI

Superintendent Arthur E. Scruggs, of Biloxi, died on October 8, following a heart attack.

NEW JERSEY

Theos I. Anderson is the new superintendent at Teaneck.

NEW MEXICO

Dr. Norland W. Strawn has been appointed superintendent of schools for Tucumcari, New Mexico. Dr. Strawn was formerly head of the extension department of Pittsburg State College, Kansas. He served in that capacity for the past seven years. In his position at Tucumcari, he succeeds Dr. Nile L. Baker.

OHIO

Dr. Claude V. Courter, superintendent of schools of Cincinnati has announced his retirement to take effect August 1, 1958. Dr. Courter will reach the retirement age of 70 on February 14.

TEXAS

Dr. L. S. Richardson is the new superintendent of schools at Cuero. W. L. Ferguson is the new president of the school board.

Frank Monroe is superintendent of the Highland Park school dist., Dallas.

Morgan E. Evans succeeds Davis Hill as superintendent in Galveston.

VERMONT

M. D. Birdsall, of East Northfield, Minn., has been appointed purchasing agent at Middlebury College, Middlebury.

WASHINGTON

Hayes Holman has been elected superintendent at Auburn.

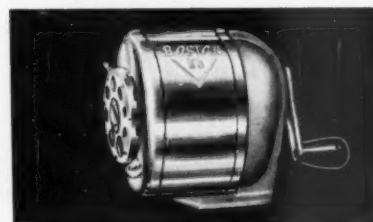
Roland H. Upton, of Auburn, has accepted the superintendency at Olympia.



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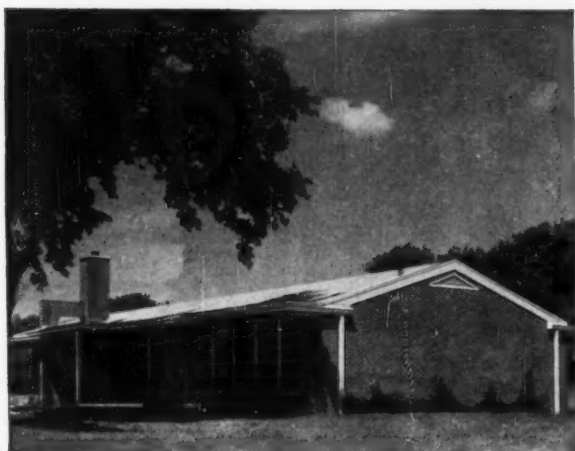
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NEW BOOKS

Salaries of Superintendents and Their Assistants in 444 Urban School Districts Over 30,000 Population

Paper, 63 pp., \$2. Bulletin No. 6, September, 1957. Research Division, National Education Association, Washington 6, D. C.

The study shows that the median salary in 1956-57, in Group One cities above 500,000 was \$22,000, and in 1957-58, \$23,000; in Group Two embracing cities between 100,000 and 500,000, the median salary was \$16,000 in 1956-57, and \$16,075 in 1957-58; in 323 cities between 30,000 and 100,000 population, the salary in 1956-57 was \$12,092, and in 1957-58, \$13,048.

In the ten years between 1946 and 1956 the median salaries arose considerably, but at a slower rate than the median for classroom teachers and principals. The salaries of superintendents in the 18 largest cities, with salary increases, ran behind those of principals and teachers.

Administrative Facilities in School Buildings

By James L. Taylor. Paper, 52 pp., 45 cents. Bulletin No. 6, 1957. U. S. Office of Education, Washington 25, D. C.

This study of administrative facilities, one of a series on functional planning, emphasizes the importance of studying and analyzing administrative functions of the school and planning the facilities to meet plant and future needs. Characteristics of various elements of administrative facilities are described and floor plan layouts are presented. The material represents the important types and various sizes of schools from all parts of the country, and supplies (1) general information on the school services and administrative activities; (2) general characteristics of the school buildings; (3) detailed data on the administrative facilities; and (4) principals' reactions and recommendations.

School District Reorganization in Adams, Chester, and Clarksville-Vernon Districts, Clinton County, Ohio

By W. R. Flesher, Ralph D. Purdy, and others. Paper, 131 pp. Bureau of Educational Research and Service, Ohio State University, Columbus, Ohio.

Report of a survey of three school systems in Clinton County, Ohio, conducted in May and June, 1957. The report points out that each of the districts is too small to provide an adequate program of education; it is recommended that the districts be combined into one administrative unit, under a single board of education. It is suggested that three high schools be established, that the Adams building be retained as a school center for grades one to eight, and that similar centers be provided in the Kingman and Clarksville buildings. It was suggested that the new school district employ a full-time local executive head, and that he be provided with suitable secretarial help. The local board, under the leadership of the executive head, should develop a statement of written policy to give consistency to its actions.

Postwar Struggle to Provide Competent Teachers

Paper, 27 pp., 80 cents. Bulletin No. 3, October, 1957. Research Division, National Education Association, Washington 6, D. C.

This revealing report on teacher shortage, calls attention to the expanding number of children to be taught and the growing competition of other occupations which have acted as a challenge in the present problem. Since 1947 the increase in the elementary grades enrollment has been 5,702,889, or 32.4 per cent. It is shown that the schools have fallen behind in their efforts to match the increase in enrollment with a comparable increase in teaching staff.

Is "Math" in the Stars for You?

Paper, 6 pp., 5 cents. Superintendent of Documents, Government Printing Office, Washington 25, D. C.

This brief booklet tells the story of a high school girl who looks at mathematics in the professions. It calls attention to the wide selection of jobs open to the girl who is qualified in mathematics. These include the computing, scientific, the research, the statistical, the actuarial, and the accounting fields.

Basic Physics

By Alexander Efron. 2 vols. in one. Cloth, 692 pp., \$7.60. John F. Rider Publishing Co., New York 11, N. Y.

This book carries the high school student forward from an understanding of the fundamental facts of matter and its properties, to a thorough discussion of the newest findings in the theory and practical use of nuclear energy. The field of physics is covered twice by a clever emphasis in the first volume on "what and how," and a distinctly deeper explanation of the "why" in the second volume. The problems particularly in the later work are searching but practical and require considerable use of mathematics.

School Construction Needs in Milwaukee

Prepared under the direction of Fred A. Wegner, of the Construction Division. Paper, 86 pp. Board of School Directors' Milwaukee, Wis.

This brochure has been prepared as a tribute to the aims and needs of those closely allied with the school construction field throughout the country. It includes plans and statistical data relating to a variety of school construction projects, including elementary and high school buildings.

Fiscal Readiness for the Stress of Change

By Paul R. Mort. Cloth, 97 pp., \$1. University of Pittsburgh Press, Pittsburgh, Pa.

In this Horace Mann Lecture for 1957, the author argues that state constitutions and local laws should include provisions for prompt changes in the methods of securing ample funds for schools. The theme is a criticism of the fact that a community which is able to provide quickly in times of change liberal funds for education is hampered by limitations of one sort or another.

Fringe Benefits in Education and Industry

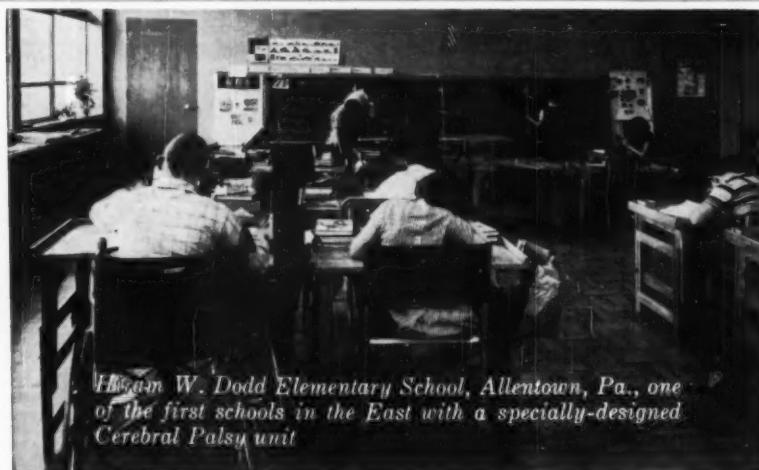
Bulletin of the New York State Teachers' Association, Albany 10, N. Y.

A comparison of industrial and school practices in granting such fringe benefits as time off with pay, pensions, sabbatical leaves, maternity leaves, etc. The study shows that in New York State teachers fare very well, especially in the small rural districts.

Special Education Personnel in State Departments of Education

Prepared by Romaine P. Mackie. Paper, 49 pp., 30 cents. Superintendent of Documents, Government Printing Office, Washington 25, D. C.

This publication is intended to be helpful in the development and improvement of standards for state leaders in the education of exceptional children. It will feel the need for a basis of selection of specialized people qualified to give leadership in the field of specialized education. The report lists needed competencies as (1) personal characteristics, (2) functions to be performed, (3) and competencies needed by state specialists.



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Educational Challenges of the Space Age

ELAINE EXTON

Russia's success in launching the first earth satellites and the advances in military rocketry this accomplishment signifies has alerted the American people to the need for assuring our nation's scientific supremacy in order to maintain national security and our position of leadership in the world. Russia's success has dramatically emphasized, furthermore, that education in the future must be of national concern if we are to accomplish these aims.

Presidential Proposals

In his two November addresses President Eisenhower described America's failure "to give high enough priority to scientific education and to the place of science in our national life (as) one of our greatest, and most glaring, deficiencies."

Stressing that "it takes time . . . for a student to become a scientist," he mentioned that "the Soviet Union now has—in the combined category of scientists and engineers—a greater number than the United States . . . and is producing graduates in these fields at a much faster rate." Reporting that "recent studies of the educational standards of the Soviet Union show that this gain in quantity can no longer be considered offset by lack of quality," he termed this trend "disturbing," adding that "indeed, according to my scientific advisers; this is for the American people the most critical problem of all."

Calling *the task* of developing thousands more scientists in the ten years ahead than we are presently planning to have a *co-operative one* in which the "Federal, state and local governments, and our entire citizenry must all do their share," he suggested that "we should, among other things, have a system of nationwide testing of high school students; a system of incentives for high-aptitude students to pursue scientific or professional studies; a program to stimulate good-quality teaching of mathematics and science; provisions of more laboratory facilities; and measures, including fellowships, to increase the output of qualified teachers."

Legislative Plans

Some Washington observers predict the above recommendations may constitute the

nucleus of the educational proposals the administration will submit to the second session of the 85th Congress in response to the challenge of Russia's technological achievements and say they may even supercede the federal-aid-for-school-construction plans the administration has presented at previous sessions regularly over the past decade.

At this writing a tug-of-war seems to be in progress between three administration factions: (1) the economy bloc which is opposing federal funds for education as usual in order to achieve a balanced budget; (2) the advocates of an education "crash program" closely tied to military needs and emphasizing federal subsidies to increase the production of scientists, engineers, and mathematicians; and (3) the exponents of a long-range, over-all program of general aid to education including funds for school buildings and/or instruction.

These divergent views—sure to produce some lively debates in Congress—make it impossible to foretell accurately the size and content of the administration program that will finally reach the Hill, and the President's latest illness adds a further note of uncertainty concerning the reception the administration policies will receive from a democratically-controlled Congress.

Some administration stalwarts have already made their positions clear. Vice-President Richard M. Nixon, for example, has stated that "in recognizing the necessity for training more scientists and engineers, we must not overlook the necessity to maintain a balanced educational program which is so essential for the survival of a free society."

Cautioning against making the mistake of simply "aping" Soviet Russia's education methods and emphasis on scientific materialism, he has made plain that "education in the United States must recognize that there are other areas—of the human spirit and the arts—which are as important as the development of our scientific and technical capability."

House Minority Leader Joseph W. Martin, Jr. (R., Mass.) on the other hand has said that when Congress reconvenes

he will introduce a bill whose plan to encourage more of the nation's youth to study science embodies a principle similar to that of the U. S. Military Academies.

According to Congressman Martin this program would operate as follows: "The Federal Government would pay for the education each year of the top five students in each Congressional District who show talent in this field. These students could be selected by competitive examinations held at the high school and junior college levels. Appointments would be non-partisan, and the selections, based on the merit tests, would be made by the U. S. Office of Education. The students would be assigned to accredited scientific universities and research institutions."

Educational Reappraisal Urged

Speaking at Oklahoma City during American Education Week, President Eisenhower turned to the nation's school boards for leadership in providing the kind of education needed in an age of "Sputniks" and intercontinental ballistic missiles.

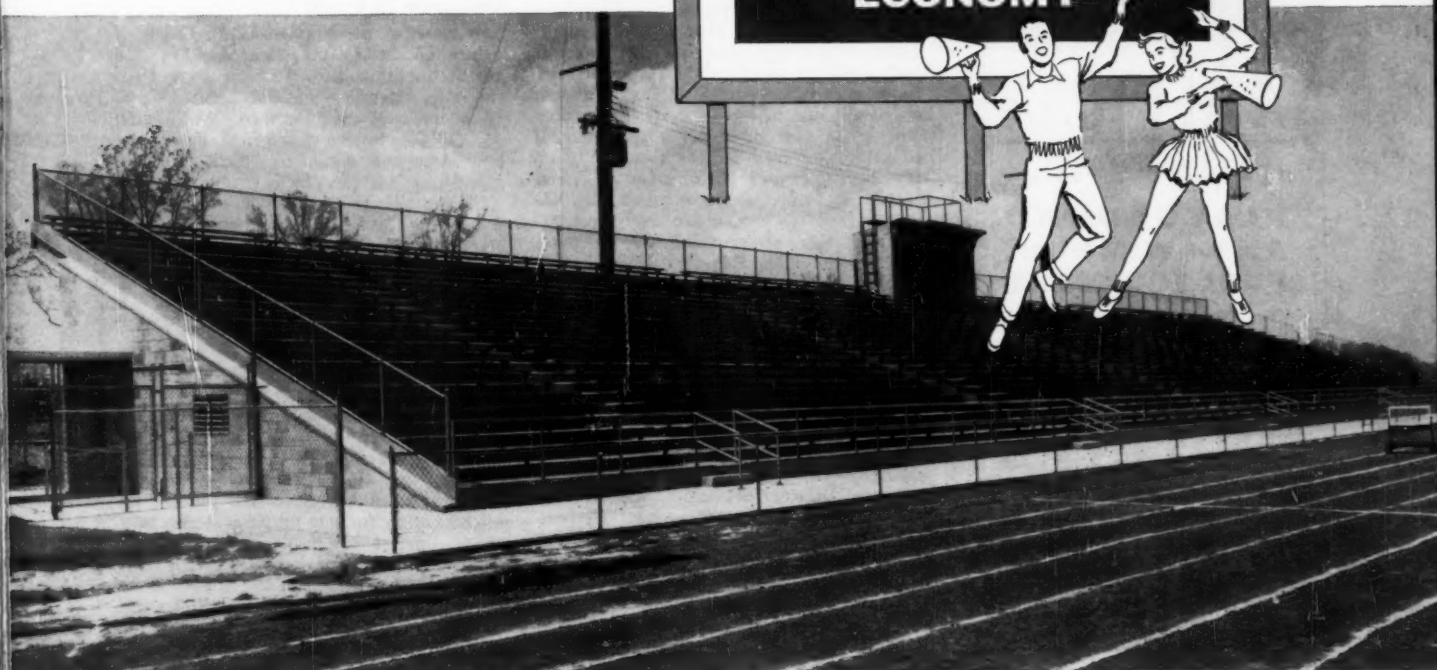
"No matter how good your school is, and we have many excellent ones," he said, "I wish that every school board and every PTA would this week and this year make one single project their special order of business. This is to scrutinize your school's curriculum and standards. Then decide for yourselves whether they meet the stern demands of the era we are entering."

Support for a re-evaluation of American education in this new age of space has been gaining ground in many quarters. Educational leaders for the most part welcomed the President's suggestion. Some sought to broaden its application to include a reappraisal of both public and private education at all levels from kindergarten through graduate schools of higher learning and beyond.

U. S. Commissioner of Education Lawrence G. Derthick viewed recent events as a challenge to "every American to re-examine the extent to which we as a people support our democratic system of education (and an incitement) to take new interest in meeting the needs of our schools,

(Concluded on page 60)

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WORD FROM WASHINGTON

(Concluded from page 58)

colleges, and universities as they serve the purposes of our society: freedom, peace, and the fullest development of the individual."

Speaking at ceremonies marking the laying of the cornerstone for the National Education Association's new center in Washington last November 17, NEA President Lyman Ginger proposed that educational stocktakings also "evaluate carefully just what we need to do through press, radio, educational organizations, and with every possible means to move forward as quickly as possible to have the kind of education we need for the future."

Military figures like Lieut. General James H. Doolittle, chairman of the National Advisory Committee for Aeronautics, and Rear Admiral H. G. Rickover, Chief of the Naval Reactors Branch of the U. S. Atomic Energy Commission, joined in the clamor for educational reforms, the latter contending that "merely spending a lot of money on scientists, scientific research, and new military projects will not be enough. In final analysis trained manpower of the future can only come out of a thoroughly reorganized educational system with totally different aims and considerably higher scholastic standards."

Among the national personalities voicing concern was former President Herbert Hoover who deplored what he called the "fundamental weakness" of high school systems that allow students to choose their own courses of study with the result

that too many pupils have been allowed to elect "soft" courses.

"Our higher institutions of learning have the capacity to train the recruits we need," he stated, "the harsh fact is that the high schools are not preparing youngsters for the entrance requirements which must be maintained by our institutions training scientists and engineers."

Education in Russia

Release of a 226-page U. S. Office of Education study on *Education in the USSR* (obtainable at \$1.25 a copy from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.) further intensified debate on how American education might best respond to space age challenges.

This publication makes it evident that the Soviet Government is giving increased emphasis and support to education at all levels as an instrument to serve the political, military, and economic goals of the Soviet State at home and abroad.

"We would be foolish, therefore," Secretary of Health, Education, and Welfare Marion B. Folsom told a Conference on Engineering and Scientific Education meeting in Chicago, "to ignore any threat to our freedom posed by the ominous fact that Russians seem to be putting more emphasis on their education, for their purposes, than Americans are putting on our education for our purposes (especially since) America is a leader in the struggle all around the world between tyranny on one side and freedom on the other."

Noting that the new Office of Education study "may permit Americans to better consider certain implications which Russian education poses to education in the United States," he cited these findings:

In the past 15 years Russia has reduced the average number of pupils per teacher in elementary and secondary education from 27 to 17. In this country, American schools still average more than 27 pupils per teacher — and they are handicapped by a shortage of about 135,000 formally qualified teachers this year.

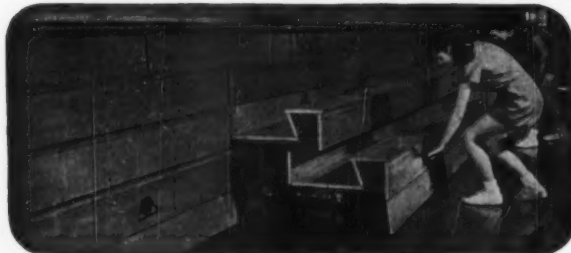
Russian children tend to get more hours of instruction in their 10-year elementary and secondary system than our children receive in 12 years.

All Russian students, under the compulsory Russian curriculum, are introduced to biology in grade 4, foreign languages in grade 5, physics and algebra and geometry in grade 6, chemistry in grade 7, and astronomy and calculus in grade 10.

Enrollments in the Russian secondary school system have increased from 130,000 in 1928 to 5¼ million last year.

While the proposals for adapting American education to meet the new challenges of our times are many and varied, there appeared general agreement that in developing new educational programs which will help the American people to survive, to remain free, and to achieve happiness in a new kind of world in which science plays an increasing role, any changes adopted must be in keeping with our nation's traditions and moral values, and accomplished by methods which scrupulously protect the basic principles of American education.

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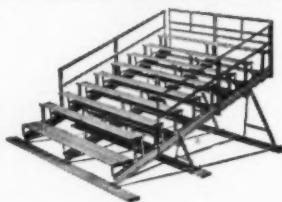
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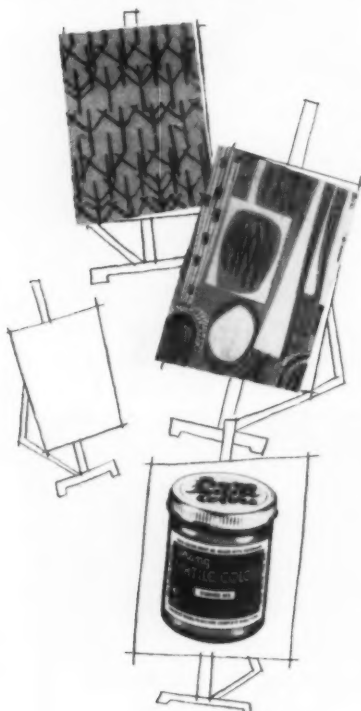


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THE SCHOOL SCENE

(Continued from page 6)

ings. "The general public knows a great deal more about school board work," according to Mrs. Frank Dyer, board president.

The station, co-owned by the board and the University of Houston, is paid \$130 an hour for broadcasting the meetings. Students studying television at the university operate the equipment.

SCHOOL POLICY AND ADMINISTRATION

BETTER PUBLIC RELATIONS

An eight-point program of improving school and community relations has been inaugurated in the Upshur County, W. Va., school by the county board of education and superintendent Darius Craven.

For many years, there was evident a great deal of unrest concerning education among board members, the school personnel, and taxpayers and friction had been constant. When the newly elected board of education assumed office late in 1956, conferences with the newly elected superintendent convinced all that strengthening the instructional program would involve a better public relations program.

The superintendent, therefore, was given the task of welding together a more understanding public and a better satisfied staff to improve the educational program of the district.

Among the new approaches initiated since July 1 to improve school and community relations have been:

1. A close relationship with the press and radio;
2. A feeling of "we" developed among the staff by enlisting their aid in the school program;
3. The establishment of a better teacher-pupil relationship;
4. The establishment of a means for keeping the board members informed as to school activities, problems, and plans;
5. The preparation of data about the schools to be used for ready reference, and the establishment of a speakers' bureau to provide programs to civic clubs and other organizations;
6. The establishment of contacts with individuals and groups and use of a language which can be understood by laymen;
7. The setting up of several citizens' committees to advance the cause of the schools;
8. The setting apart of a portion of each board meeting to discuss some aspect of the instructional program. Under the plan, each teacher or staff member will make a short presentation, followed by questions and discussions by board members.

COMMUNITY CONFERENCES ON EDUCATION

The Shoreline school district, Seattle Wash., has completed plans for another successful community conference on education. The conference, sponsored by the local citizens' advisory committee, is intended to contribute to better understanding of the purposes of education in the community. Community leaders throughout the district attend the sessions, which are broken down to permit the broadest form of personal participation. Supt. Ray W. Howard reports that the district has profited greatly by this expression of popular interest in the schools.

LAY ADVISORY COMMITTEES

The National Citizens Commission estimated a short time ago that there were in operation



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over 11,000 lay advisory committees to boards of education. The rapid growth of these committees in less than a ten-year period indicates that many school districts regard them as a most effective technique to obtain and improve good school-community relations.

The trends reveal that the modern lay advisory committee:

- In type is either (1) permanent and continuing, or (2) short-term—formed for a specific purpose and then disbanded.

- In purpose can be devoted to any school subject. Most popular is the general "curriculum" committee and the "school-building" committee.

- In membership is ideally composed of more than two-dozen members—outstanding representatives from many community groups.

The most successful committees are organized for a defined, constructive, and needed purpose; represent varying interests in a district; results in improved communication between schools and community; and should have good leadership and a set of guiding principles.

Examples of recent successful advisory committees:

- A seven-member textbook committee in Bremerton, Wash. Duties of the committee: (1) act as a reviewing committee of textbooks which have gone through the teachers' screening process and to make selections for acceptance; (2) develop an acquaintance with textbooks needs as related to replacement periods of the books now in use.

- Two committees in Fairfield, Iowa—one to study high school curriculum; another to study teachers' salaries.

- A citizens' "curriculum workshop" in Pocatello, Idaho, studying curriculum with a special subcommittee studying the possibilities for expanding the gifted-child program.

- A general study of the "entire school system" by a 26-member Freeport, Ill., committee.

- In Andalusia, Ala., a 14-member committee on four areas of the district's schools: curriculum; financing; buildings, grounds, and safety; athletics and extracurricular activities.

HIGH SCHOOL DROPOUTS

The problem of dropouts in grades seven through twelve has been attacked in the high schools of La Crosse, Wis. Under the direction of Supt. Arthur Jordan, a continuous study of the experience in grades seven to twelve has been made by Miss Josephine Hintgen, Assistant Superintendent of Schools. The purpose of the study has not been so much to learn the numbers who have left the schools, but rather to develop a vigorous plan of activities which would have prevented the dropouts, and second get the boys and girls who have gone into local occupations to return to school either for full-time day attendance, or for evening classes.

The study which began in 1954 and which is being continued through 1957, has been particularly helpful in recognizing the boys and girls who are likely to leave school, and to provide instructional materials to meet their needs and interests. A considerable number of changes in the educational program has been set up and the teachers have been alerted to give every pupil an opportunity to make the most of his or her mental ability, attitudes, and interests.

The study showed that out of an enrollment of 2930 pupils in grades seven through twelve, 133 pupils, or 4.5 per cent, were dropouts during the school year 1956-57. Twenty-five of the dropouts, or 1.7 per cent, were enrolled in grades eight and nine, while 108, or 7 per cent were in grades ten, eleven, and twelve.

The study also showed that the percentage of dropouts in 1956-57 was 1.2 per cent higher than the lowest in 1953-54. The school grades



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of pupils at withdrawal for the most part were failures, very poor, or fair; over half of the intelligence ratings were low-average or below; a decided lack of interest for study, and poor attendance.

Students who withdraw are informed that they may complete high school by return to full-time school or attendance at evening school. About 25 per cent of the dropouts return to high school or night school to obtain a diploma.

SCHOOL STAFF

TEACHERS' SALARY TRENDS AND THE COST OF LIVING

According to a recent report of the National Education Association's Research Division, the minimums and maximums of classroom teachers' salary schedules for 414 urban school districts have risen about six or seven per cent for 1957-58 over last year.

The report, however, also quotes the Consumer Price Index to the effect that prices have risen 5.7 per cent since August of 1955 and 3.6 per cent since August, 1956.

It summarizes that the 1957-58 schedules' increases for city teachers are "a jump ahead of the rising cost of living."

Three other trends are also noted:

1. The superior salary position once enjoyed by teachers in great metropolitan centers is diminishing. This year the maximum salary schedule median for master's degree holders was only 7 per cent higher in cities with over a half-million population than in cities of 30,000 to 100,000 in population. Five years ago it was 14 per cent higher.

2. Experience continued to have less effect on salaries. In the cities over a half million in population, the median *maximum* for master's degree holders is only 66 per cent higher than the median *minimum* for bachelor's degree holders. Five years ago it was 81 per cent higher.

3. Growing numbers of city school systems are now paying higher salaries to teachers who have gone beyond the master's degree in preparation.

EXTRACURRICULAR PAY SCHEDULE

The board of school directors of Milwaukee, Wis., has revised its schedules and provisions for extracurricular services, to become effective in 1958.

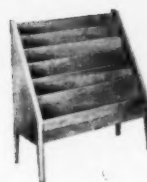
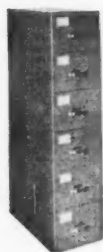
For services in football the compensation ranges from \$250 to \$500; for basketball, \$250 to \$450; for track, \$250 to \$350; for baseball, \$150 to \$200; for swimming \$250; for golf, \$150; for tennis, \$150; for wrestling, \$250; for athletic manager, \$150 to \$200; for intramural coaches, \$240; for music director, \$150;

(Continued on page 66)



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SCHOOL SCENE

(Continued from page 64)

for director of plays, operettas, and entertainment, \$150; for stage crew manager, \$100; for manager of student ushers, \$100; for other activities, including bookstore manager, librarian, and guidance counselor, \$240.

Under the rules, no teacher assigned to two or more types of services may receive more than \$750 additional compensation under the schedule, except that the person assigned to summer baseball may receive \$850.

A maximum of ten class periods in senior high schools and eight periods in junior high schools may be assigned for extracurricular and cocurricular activities.

PAY OF HOME INSTRUCTORS

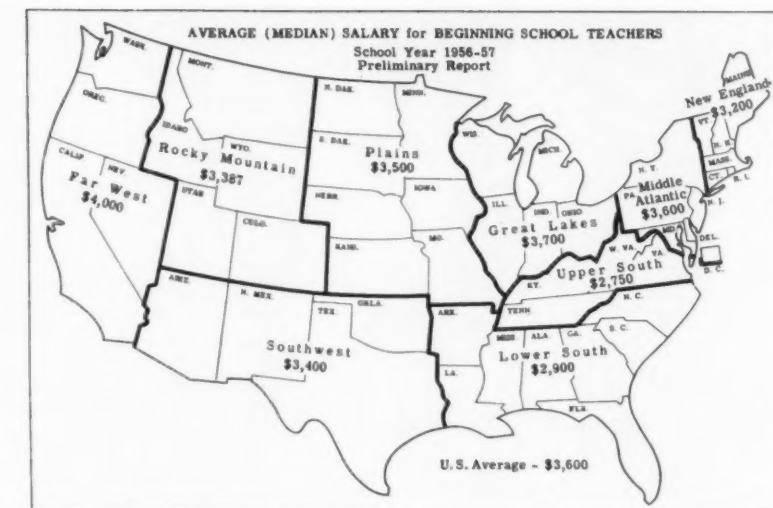
The board of education of Cincinnati, Ohio, has passed a resolution providing that home instructors shall be paid at the rate of the third step in the Class III teachers' schedule, a ten-month work year, 117 hours per month. Formerly, home instructors were paid on an hourly basis. The change to the annual basis means that the school district will receive \$11,000 per year from the state school funds.

JUNIOR EXECUTIVE PROGRAM

The board of education of Dist. 15, Edmonds, Wash., which has been faced with a rapid expansion of school building facilities, has been desirous of conducting promotions of personnel from within whenever possible.

To facilitate the board has established a "junior executive" program through which each administrative position is geared to a selected "trainee" working without added compensation to acquaint himself or herself with the duties involved.

The dual purpose of the program is to



familiarize individuals with work details and to create a better basis for administrative selections when vacancies occur or new positions become available. Participation in the program is entirely voluntary and must be approved by the board. The "trainee" may work on released time, or on his own time after school hours.

PROFESSIONAL ORGANIZATIONS

The San Francisco board of education is enforcing a rule under which complete freedom is granted to teachers concerning membership in professional organizations. The rule reads as follows:

1. Teachers and all other employees of the board of education shall have complete freedom in selecting the professional organizations which they may wish to join, without coercion of any kind from any administrative officer or other school employee.

2. Whatever courtesies are extended to any teacher organization in the schools shall be fully and unreservedly extended to all teacher organizations.

3. The use of any coercion or pressure by any principal or other administrative officer or other school employee to influence any teacher to join or refrain from joining any

(Concluded on page 68)

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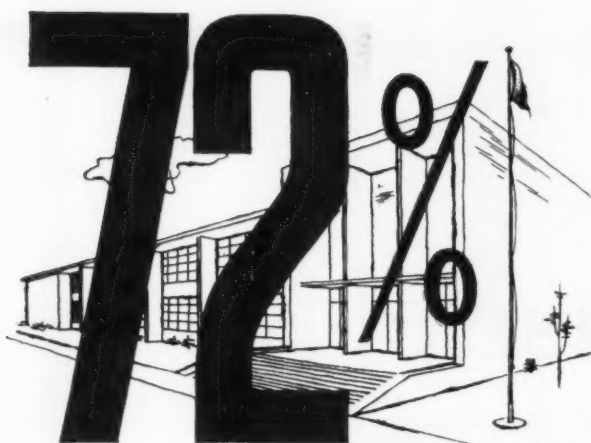
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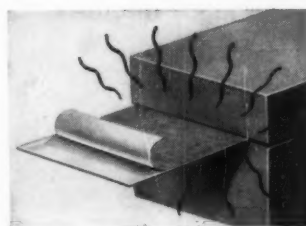


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Vinyl is laminated to steel through Samsonite's exclusive thermal-pressurized process that renders it virtually indestructible.



Samsonite is Slash-Proof!
Knife blades are ineffectual against PlastiShield's surface. Samsonite PlastiShield chairs won't cut, nick or tear—stay new looking years longer.



Samsonite . . . also makers of Classroom Furniture



Samsonite is Burn-Proof!

Cigarettes are no match for PlastiShield's surfaces. Let them burn right down to the tip—and take a look! Not a sign of sear or singe.



Samsonite is Stain-Proof!

Why cry over spilled ink? PlastiShield's protective surface sponges clean. Even nail polish or polish remover rubs right off.

SHWAYDER BROTHERS, INC., Dept. AM-1,
Institutional Seating Div., Detroit 29, Michigan

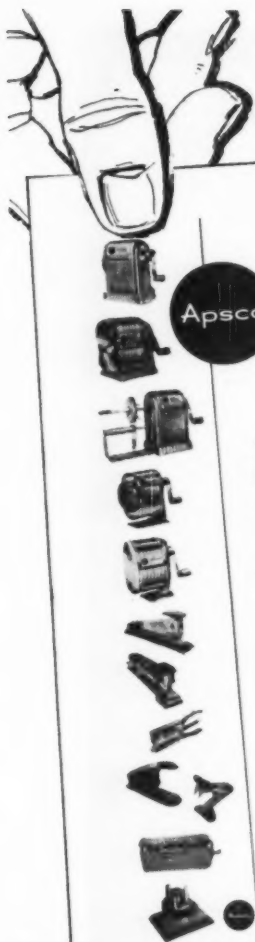
Write Today for free informative booklet,
PlastiShield sample discs. Make your own tests.
Prove that PlastiShield resists damage better.

NAME _____ POSITION _____

ORGANIZATION _____

ADDRESS _____

CITY _____ ZONE _____ STATE _____



An Open Letter to School Officials:

Apsco PRODUCTS INC.

NO SALES OFFICES 9810 WEST 1100 BLVD. LOS ANGELES 35 CALIF.
ADDRESS: POST OFFICE BOX 840, BEVERLY HILLS, CALIF.

As we observe the 50th anniversary of the granting of patents for the first automatic pencil sharpener, **ONE FACT** stands out above all else...

Our pledge, in the form of the Apsco Merchandise Warranty, has, throughout the years, been the ultimate assurance of satisfaction to the user of our products. Apsco Products, Inc., has never failed to live up to the letter of that pledge.

On this Golden Anniversary, we renew that pledge to all users of Apsco Products, confident that our fifty-year history of developing and producing the finest quality precision equipment is the brilliant performance of the past on which the promise of the future can be confidently accepted.

A. D. Farrell

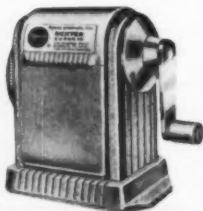
A. D. Farrell
Vice-Pres. in Charge of Sales.
ADF/jc

PENCIL SHARPENERS • STAPLERS • STAPLE REMOVERS • PUNCHES
FACTORIES: ROCKFORD, ILL. • TORONTO, CAN.

Apsco Products Inc., Manufacturers & Distributors of highest quality pencil sharpeners, staplers and punches.

DEXTER SUPER-10

Classically beautiful steel frame, heavy-duty, double-bearing unit constructed to stand up under heavy usages in grades 1 thru 8. Features Cyclo-lac® receptacle, unconditionally guaranteed against breakage.



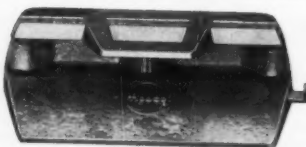
MODEL 3003 STAPLER



Pins, staples and tacks. Front drawer type staple loader for 210 full strip standard wire staples. Ideal for pinning test papers, inter-departmental notes, or tacking notices to bulletin boards.

50th
ANNIVERSARY

MODEL 330 3-HOLE PUNCH



Standard 4 1/4" center-to-center punch; 1/4" case-hardened drills perforate up to 30 sheets of 16 lb. Bond. Right-hand guide centers up to 11" paper.

Apsco

America's School Choice!

Los Angeles, Calif.—Rockford, Ill.
Toronto, Canada

News of Products

NEW LINE OF FOLDING TABLES

The Sico Manufacturing Co., Inc., Minneapolis 7, Minn., announced production of a new line of folding table and bench combinations, recently redesigned by Lippencott and Margulies, prominent industrial designers. The tables are available in five colors: platinum, walnut, limed rift oak, rotary birch, and tan and green linen. The pictured model, B-Y,



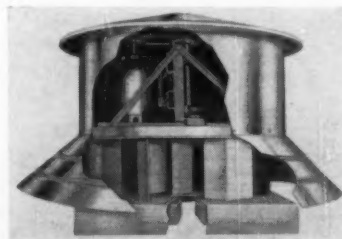
Colorful Folding Tables

is a 10- or 12-ft. portable folding cafeteria table with attached benches. Other new models are: Tip-Top, a portable cafeteria model available in 6-, 7-, or 8-ft. lengths; L-B, also portable, in 8-, 10-, or 12-ft. lengths for use with chairs; 1900 a stationary model in 6-, 7-, or 8-ft. lengths to fit fixed seating needs.

(For Convenience Circle Index Code 01)

ROOF VENTILATOR

A new Gyra-Flo Power Roof Exhauster, designed for installations requiring a minimum operating noise factor, has been announced by the Chicago Blower Corp., Franklin Park, Ill. Particularly useful for ventilating schools, hospitals, and institutions where roof ventilation is desirable, this unit controls



Noiseless Ventilators

the flow of air through the exhauster keeping turbulence and discharge losses to an absolute minimum. It features noiseless, vibrationless operation. It is furnished in aluminum, galvanized iron, copper, stainless steel or any metal specified, the company reports. The entire unit is so designed for ease in maintenance, that the motor and fan wheel can easily be removed without disturbing the rest of the unit.

(For Convenience Circle Index Code 02)

(Continued on page 71)

CORRESPONDING CODE INDEX NUMBERS TO BE ENCIRCLED CAN BE FOUND ON THE CARDS IN THE READER'S SERVICE SECTION



BRONZE

PORTRAIT TABLETS
MEMORIALS
DONOR PLAQUES
HONOR ROLLS



ORNAMENTAL LIGHTING FIXTURES

in Wrought Iron,
Bronze
and Aluminum
produced to order.

Illustrated Catalogs
& Estimates
sent on request.



MEIERJOHAN-WENGLER

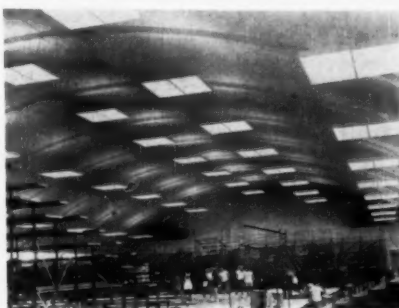
1102 W. 9th St. CINCINNATI 1, OHIO

News of Products . . .

(Continued from page 70)

GYMNASIUM LIGHTS

Fifty Gym Dandy lighting units illuminate the field house at Northern Illinois University, Dekalb, Ill. They provide 60 to 65 foot-candles of illumination 18 in. above the floor.



Powerful Reflector Lights

Deep individual Alzak reflectors for each lamp provide 75 per cent downlight with 10 per cent uplight. Light cutoff is 40 degrees. Each Gym Dandy is suspended 35 feet above the floor and is protected above and below by an 18 gauge steel guard. The lights are made by the Edwin F. Guth Co., St. Louis 3, Mo.

(For Convenience Circle Index Code 03)

(Concluded on page 72)

CORRESPONDING CODE INDEX NUMBERS TO
BE ENCIRCLED CAN BE FOUND ON THE CARDS
IN THE READER'S SERVICE SECTION

The beautiful Style 10 Everett is designed for long, trouble-free service. Full-cast plate, double veneered case, full-size action. Unexcelled tone provided by 44-inch height. Cost is amazingly low. Mail coupon for factual book and list of hundreds of prominent users.



Report on
Style 10
EVERETT
for schools
and churches

SEND TODAY

Everett Piano Company
Division of Meridan Corp.
Dept. H-3101, South Haven, Michigan
Please send free copy of "Report 10."

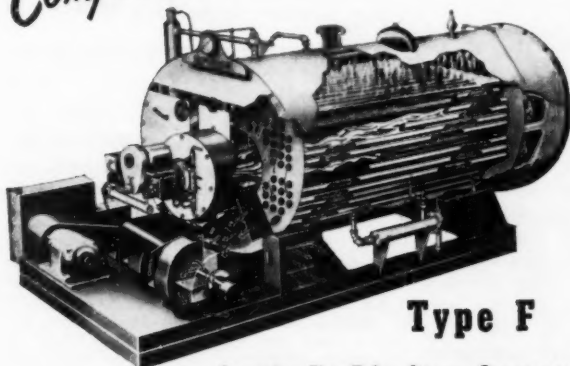
NAME _____

ADDRESS _____

CITY _____

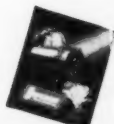
STATE _____

Completely PACKAGED BOILERS



Type F

Superior Fire Tube Steam Generators are completely factory assembled and tested. Capacities range from 20 to 600 b.h.p. for steam or hot water heating and for industrial applications requiring pressures to 250 p.s.i. Built-in induced draft and full 5 sq. ft. of heating surface per b.h.p. provides efficient operation firing oil, gas or both.



Write today
for details
in Catalog 780 F

for performance you can **BANK** on

SUPERIOR COMBUSTION INDUSTRIES INC.
TIMES TOWER, TIMES SQUARE, NEW YORK 36, N.Y.

SUPERIOR
STEAM GENERATORS

Gym Costs Are No Problem With Money-Makers Like This



Community Skating — Our Lady Lourdes High School, Marinette, Wis.

\$13,000 net from roller skating! That's how this school helped finance its new gym and more than paid the cost of its floor the very first year! Soft, dead flooring which false economy sometimes substitutes can't take skating, of course. For maximum liveliness with wear, make your floor Wells' **DIAMOND HARD** Northern Maple too.



**NORTHERN MAPLE
J. W. WELLS
LUMBER COMPANY**

Menominee, Michigan
Phone UNION 3-9281
Member, Maple Flooring
Mfrs. Assn.

For More on Money-making Gyms, write —

MORE BOUNCE PER OUNCE — LESS DENTS MAKE SENSE



Fixed columns
adjustable
shelves



Schooline® WARDROBE SYSTEMS

Solve the pupil wraps problem efficiently with Wallmount Coat and Hat Racks. Mount on any available wall space. Hat shelves and hanger bar adjustable on permanently attached columns to height for any age group. Double hat shelves and double row of spaced coat hooks accommodate 6 pupils per running foot. Basic 3" or 4" 2" units interlock to make continuous racks to fit any space or capacity requirements.

OVERSHOE RACKS



Matching units for Wallmount. Keep overshoes off the floor in an orderly manner.

Write for "Schooline" Catalog SL-206

VOGEL-PETERSON CO.
1127 West 37th Street • Chicago 9, Illinois

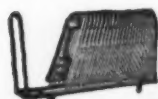


Monroe FOLDING BANQUET TABLES

Direct Prices &
Discounts to
Schools, Churches,
Clubs, Lodges and
All Organizations



Full line of
folding chairs



Above: Transport-
Storage Truck No.
TSC

Right: Transport-
Storage Truck No.
TSS

MONROE TRUCKS

Transport and store your folding tables and chairs the easy, modern way with Monroe All-Steel Trucks. Each truck is designed to handle either tables or chairs. Construction of Truck No. TSC permits storage in limited space.



WRITE FOR CATALOG,
PRICES AND DISCOUNTS



THE MONROE COMPANY
& CHURCH STREET, COLFAX, IOWA

SCHOOL HEATING

(Concluded from page 34)

Fixed Costs	Per Year	Per Sq. Ft. Per Year	Per Student Per Year
1. Amortization 20 year period \$193,900	\$9,695.00	0.082	7.34
2. Repairs & Maintenance \$10/ton/year	2,914.00	0.025	2.21
Power and Water			
1. Power (cooling only) 158,600 KWHR	1,586.00	0.013	1.20
2. Water (cooling only) 1,208,000 gallons	241.60	0.002	0.18

The total figure of \$10.93 per student per year arrived at by the committee is unusually high, owing to the high cost of adding air conditioning to an existing building. Applying the same factors to the Ethel Avenue school, figures already cited would give an amortization cost of only \$2 per pupil per year. Repairs and maintenance on the same \$10-a-ton-year basis would be \$1.30. Adding the estimated Austin power and water costs — which are figured for the normal school year in an unusually hot climate — yields a total of \$4.68 per pupil per year for the cost of owning and operating a school air conditioning system.

In view of the fact that the average total cost of education, including teachers' salaries, plant and equipment is \$293 per pupil per year, this figure seems extremely modest.

"Compatible" Cooling

It should be emphasized that all the figures used in this article are for what might be described as "compatible" systems of school heating, ventilation, and air conditioning. Where unit ventilation is employed for the essential purposes of cold weather heating and outdoor air cooling during the heating season, the addition of refrigeration cooling is relatively simple and economical. All that is required is that the unit ventilators employed be of the air-conditioning type: that is, have coils designed for chilled water cooling as well as hot water heating, and that the piping system employed be of adequate size, insulated to prevent condensation during chilled-water operation, and include a condensate drainage system. These steps are those which have been described as provisions for "future" air conditioning. As has already been pointed out, they cost on the average some 15 to 20 cents per sq. ft. Under such a system of heating and ventilation, the addition of summer cooling involves only provision of a refrigeration water chiller and proper cooling tower to supply chilled water to the air condi-

tioning unit ventilators. This step, whether taken at the time of original construction or later on, costs on the average between 45 and 55 cents per sq. ft.

The resulting system has the considerable advantage that outdoor air, "natural," cooling is available at all times and it is never necessary to operate the refrigeration system or water chiller when "free" outdoor air is available to do the cooling job. Thus, it is frequently possible to "purge" a school of accumulated heat at night, without operating the refrigeration system and thus to relieve the refrigeration system of the carry-over load it would otherwise have to handle. Since unit ventilator vents can be operated for such natural cooling at about 1/30 of the cost of running the refrigeration system, this can save a good deal of money.

When, on the other hand, air conditioning of the conventional commercial type is employed in school buildings, it is extremely important to make sure that provision is made for adequate outdoor air cooling in cool weather, since it will otherwise be necessary to operate the refrigeration system to overcome "heat load" from the pupils, the lighting system, and incoming sunshine in even quite cold weather.

THE SCHOOL SCENE

(Concluded from page 66)

organization shall be deemed to be unprofessional conduct.

4. The superintendent of schools shall call attention to this rule at the beginning of each school term by means of a notice in the Superintendent's Bulletin.

News of Products . . .

(Concluded from page 71)

MULTIGRAPH BRAILLE DUPLICATOR

A revolutionary development in the field of blind communications is the new Multigraph Braille Duplicator manufactured by the Addressograph-Multigraph Corp., Cleveland, Ohio. The new machine makes possible, for the first time, reproduction of Braille material in almost any quantity at a very low cost and at speeds of mechanical reproduction.

Special Braille "type" is handset one line at a time and inserted into the drum of standard Multigraph Duplicators. The raised letter symbol is reproduced on paper in the same manner other printed materials are duplicated. The procedure is easy for the blind to learn.

(For Convenience Circle Index Code 04)

CATALOGS & BOOKLETS

Three new specifications for floor tile have been issued separately by the Asphalt Tile Institute. The new specifications cover vinyl asbestos tile, asphalt floor tile, and grease resistant asphalt tile.

(For Convenience Circle Index Code 05)

CORRESPONDING CODE INDEX NUMBERS TO BE ENCIRCLED CAN BE FOUND ON THE CARDS IN THE READER'S SERVICE SECTION

READER'S SERVICE SECTION

INDEX TO SCHOOL EQUIPMENT

The index and digest of advertisements below will help you obtain free information, catalogs, and product literature from the advertisements and companies listed in the new products section. Merely encircle the code number assigned to each firm in the request form below, clip the form and mail it to THE AMERICAN SCHOOL BOARD JOURNAL. Your request will receive prompt attention.

Code No.	Page No.	Code No.	Page No.
10	American Crayon Co. 62	113	Hillyard Chemical Co. 53
	Prang textile colors.		Maintenance supplies.
11	American Desk Mfg. Co. 2	114	Hunt Pen Co., C. Howard . . 54
	No. 300 chair desk.		Boston pencil sharpeners.
12	American Playground Device Co. 60	115	Hussey Mfg. Company . . . 60
	Playground & swimming pool equipment.		Roll-out gym seats.
13	Apso Products, Inc. 70	116	Maple Flooring Mfgs. Assn. 7
	Pencil sharpeners, staplers, punches.		Northern hard maple.
14	Bendix-Westinghouse Automotive Air Brake Co. 61	117	Mayline Co. 66
	Air brakes.		Art and drafting table.
15	Berlin Chapman Co. 57	118	Medart Products, Inc., Fred 2nd cover
	Ex-A-Way Bleachers		Telescopic gym seats.
16	Butler Mfg. Co. 55	119	Meierjohan-Wengler 71
	Steel building products.		Bronze tablets, memorials, honor rolls.
17	Delta-Rockwell Power Tool Division 67	120	Metalab Equipment Corp. . . 4
	Power tools.		Laboratory equipment.
18	Dettra Flag Company, Inc. 62	121	Mississippi Glass Co. 5
	Flags for schools.		Rolled, figured and wired glass.
19	Everett Piano Co. 71	122	Monroe Company, The 72
	Pianos. Use coupon page 71 for copy of report.		Folding tables and chairs. Transport storage truck.
110	Guth Co., Edwin F. . . 4th cover	123	Nesbitt, Inc., John J. . . . 8 & 9
	School lighting.		Heating, ventilating and air conditioning units.
111	Hampden Specialty Products, Inc. 67	124	Owens Illinois: Kimble Glass Co. Sub. 11
	Folding chairs.		Glass block and toplite panels.
112	Heyer Corp., The 54	125	Pittsburgh-Des Moines Steel Co. 59
	Spirit duplicator.		Steel deck grandstands.

USE THESE CARDS ▶

These cards are provided for the convenience of THE AMERICAN SCHOOL BOARD JOURNAL readers in requesting information on products, services, booklets, and catalogs offered by the advertisers in this issue.

January, 1958

THE AMERICAN SCHOOL BOARD JOURNAL
400 North Broadway, Milwaukee 1, Wis.

Please ask the manufacturers, whose code numbers I have encircled, to send me free information, catalogs or product literature as mentioned in this issue of the JOURNAL.

10 13 16 19 112 115 116 121 124 127 130 133 136 138 140 142
11 14 17 110 113 116 119 122 125 128 131 134 137 139 141 143
12 15 18 111 114 117 120 123 126 129 132 135 139A

NEWS OF PRODUCTS FOR THE SCHOOLS

01 02 03 04 05

Also information on _____

Name _____

Title _____

City _____

School _____

Zone _____

State _____

January, 1958

THE AMERICAN SCHOOL BOARD JOURNAL
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12 15 18 111 114 117 120 123 126 129 132 135 139A

NEWS OF PRODUCTS FOR THE SCHOOLS

01 02 03 04 05

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Name _____

Title _____

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School _____

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State _____

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AMERICAN SCHOOL BOARD JOURNAL

P.O. Box No. 2068

MILWAUKEE 1, WISCONSIN

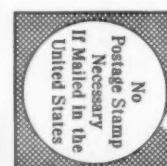
BUSINESS REPLY CARD

First Class Permit No. 1112, Milwaukee 1, Wis.



BUSINESS REPLY CARD

First Class Permit No. 1112, Sec. 34.9 P. L. & E., Milwaukee 1, Wis.



AMERICAN SCHOOL BOARD JOURNAL

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MILWAUKEE 1, WISCONSIN

READER'S SERVICE SECTION

(Continued)

Code No.		Page No.	Code No.		Page No.
126	Powers Regulator Co.....	13	139	Upright Scaffolds	51
	Temperature controls.			New work platform "Tallescope."	
127	Premier Engraving Co.....	72	139A	Virco Mfg. Co.....	16
	Engravers			School furniture.	
128	Remington Rand, Inc.....	65	140	Vogel-Peterson Co., Inc...	72
	Library supplies.			Wardrobe systems.	
129	Richards-Wilcox Mfg. Co...	63	141	Wear Proof Mat Co.....	12
	In-a-wall classroom wardrobes.			Rubber matting.	
130	Safway Steel Products, Inc.	15	142	Weber Costello Co.....	64
	Telescoping gym seats.			Chalkboards, chalk, erasers, art material.	
131	Shwayder Brothers, Inc....	69	143	Wells Lumber Co., J. W....	71
	Samsonite folding chairs.			Northern maple.	
132	Sloan Valve Company....	1			
	Flush valves.				
133	Southern California Plastering Institute	14			
	Genuine Lath and Plaster.				
134	Structural Slate Co.....	56			
	Natural slate chalkboards.				
135	Superior Combustion Industries, Inc.	71			
	Steam generators.				
136	Taylor Co., Halsey W.....	12			
	Drinking fountains.				
137	Todd Shipyards Corp.....	66			
	Gas or oil burners.				
138	Universal Bleacher Co.	3rd cover			
	Bleachers. Use coupon page 57 for planning calculator.				

NEWS OF PRODUCTS FOR THE SCHOOLS

01	Sico Mfg. Co., Inc.....	70
	Folding Tables	
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03	Edwin F. Guth Co.....	71
	Gymnasium lights	
04	Addressograph-Multigraph Corp.	72
	Braille Duplicator	
05	Asphalt Tile Institute....	72
	Specifications	

HERE'S WHAT YOU NEED WHEN PLANNING A GYMNASIUM

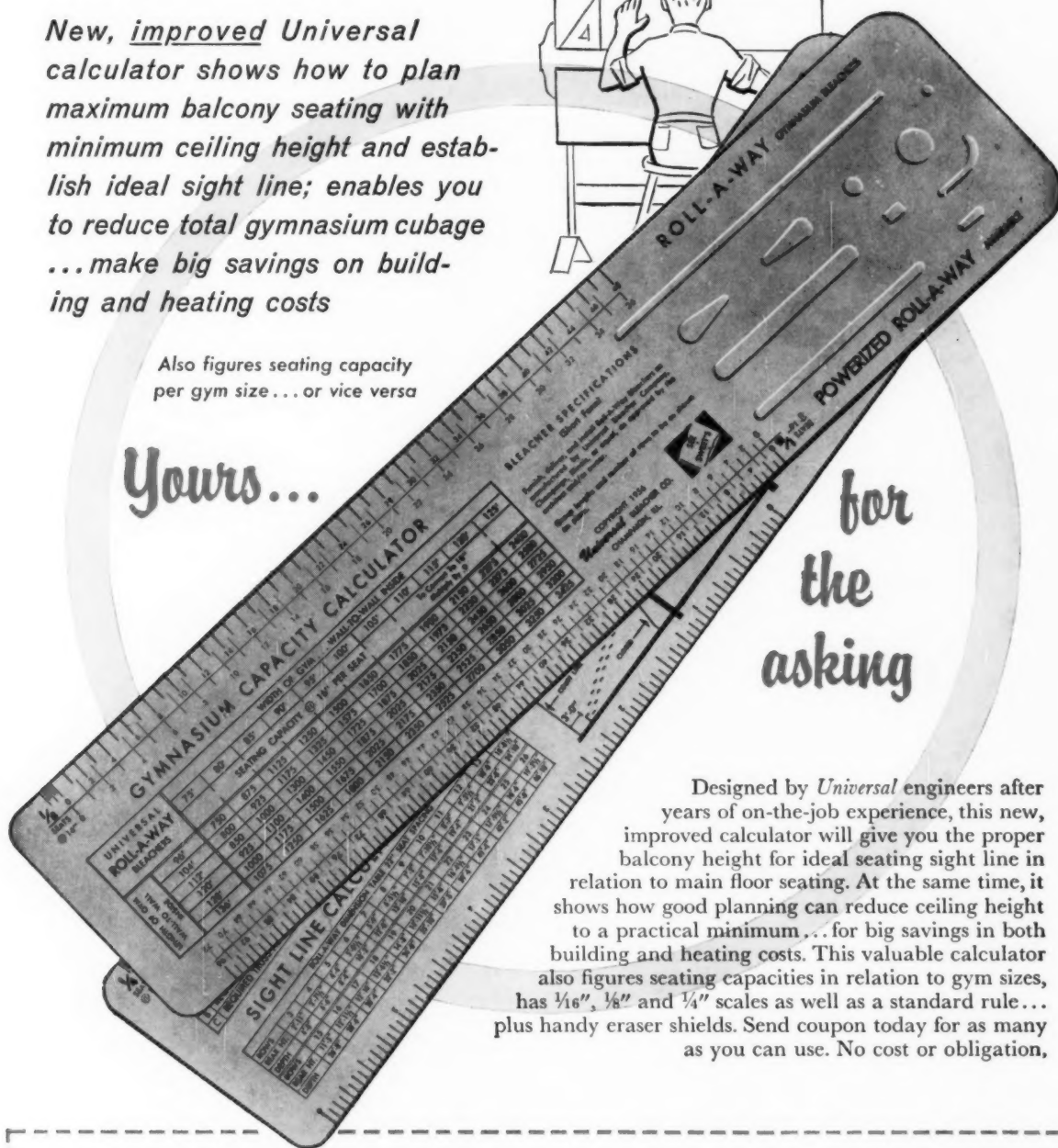
New, improved Universal calculator shows how to plan maximum balcony seating with minimum ceiling height and establish ideal sight line; enables you to reduce total gymnasium cubage ... make big savings on building and heating costs



Also figures seating capacity per gym size ... or vice versa

Yours...

for the asking



Designed by *Universal* engineers after years of on-the-job experience, this new, improved calculator will give you the proper balcony height for ideal seating sight line in relation to main floor seating. At the same time, it shows how good planning can reduce ceiling height to a practical minimum ... for big savings in both building and heating costs. This valuable calculator also figures seating capacities in relation to gym sizes, has $\frac{1}{16}$ ", $\frac{1}{8}$ " and $\frac{1}{4}$ " scales as well as a standard rule ... plus handy eraser shields. Send coupon today for as many as you can use. No cost or obligation,

UNIVERSAL BLEACHER CO.

Champaign, Illinois

I would like _____ (how many) of your improved calculators which can be used to advantage in planning a new gym. This request involves absolutely no cost or obligation to me.

Name _____

Organization _____

Address _____

City _____ State _____



the sad case of Professor Dunkle

OR... WHO WANTS TO REPLACE HIM?

Dunkle taught Economics in Room 10 for twenty-six years. After five years, he had a definite squint. On his twentieth anniversary, he asked boldly for softer lights and more of them. But the school was "economizing".

Room 10 wore the air of a tomb. Dunkle's eye trouble forced him to draw the blinds against the sun, and the lights were so high up they did nothing but shine brightly at the ceiling. Students who sometimes awakened saw only spots before their eyes.

Finally, poor Dunkle had to resign, seven years before his time — a victim of poor lighting!

At the last Board meeting, everyone asked—"WHOM can we get to teach in Dunkle's room?"

They have since discovered the answer: **NOBODY!**

MAKE SCHOOL DAYS **HAPPY DAYS** IN YOUR SCHOOL.

INSTALL SIGHT-SAVING **GUTH** LIGHTING NOW!

Write for name of your nearest Guth Lighting Specialist.

He'll help you work out a **plan**.

Guth

THE EDWIN F. GUTH COMPANY

ST. LOUIS 3, MO

TRUSTED name in lighting since 1902